DOCUMENT RESUME

ED 451 820 HE 033 950

AUTHOR	Belle-Isle, Louis Phillip
TITLE	Curriculum Development Guide Based on a Technical Program.
ISBN	ISBN-2-921024-51-9
PUB DATE	2000-00-00
NOTE	73p.; Published by Breath-by-Breath.
PUB TYPE	Guides - Non-Classroom (055)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Anesthesiology; Competence; Course Content; *Curriculum Development; Foreign Countries; Higher Education; Job Analysis; *Job Skills; *Program Development; *Technical Education
IDENTIFIERS	Quebec; *Vanier College (Canada)

ABSTRACT

This "Guide" is intended for educators who have been mandated to develop or modify an educational program's curriculum. The guide presupposes the formulation of an exit-profile and focuses exclusively on activities after the exit-profile has been developed. The development of a curriculum is based on an exit-profile that mirrors the entry-level competencies of the profession to increase the likelihood that graduate abilities will match employer expectations. The guide is divided into a section intended to serve as a formal introduction to the program and a section on curriculum development, which is a series of steps beginning with translating the exit-profile competencies into learning activities and moving through the formulation of a program grid and the composition of course outlines. The format is modeled on a competency-based curriculum developed for the Respiratory & Anesthesia Technology Program of Vanier College, Quebec, Canada. The micro learning activities, listed under each performance criterion, of a course double as outcome expectations, so that each learning activity is an objective for student assimilation and for the teacher to use during assessment activities. The integration of learning activities is undertaken in material within a course as the driving force for a successful program. Attachments contain description of the basics of the course (course outline and "Basic Instrumentation" and a memorandum of understanding between the college and the affiliated clinical sites. (SLD)

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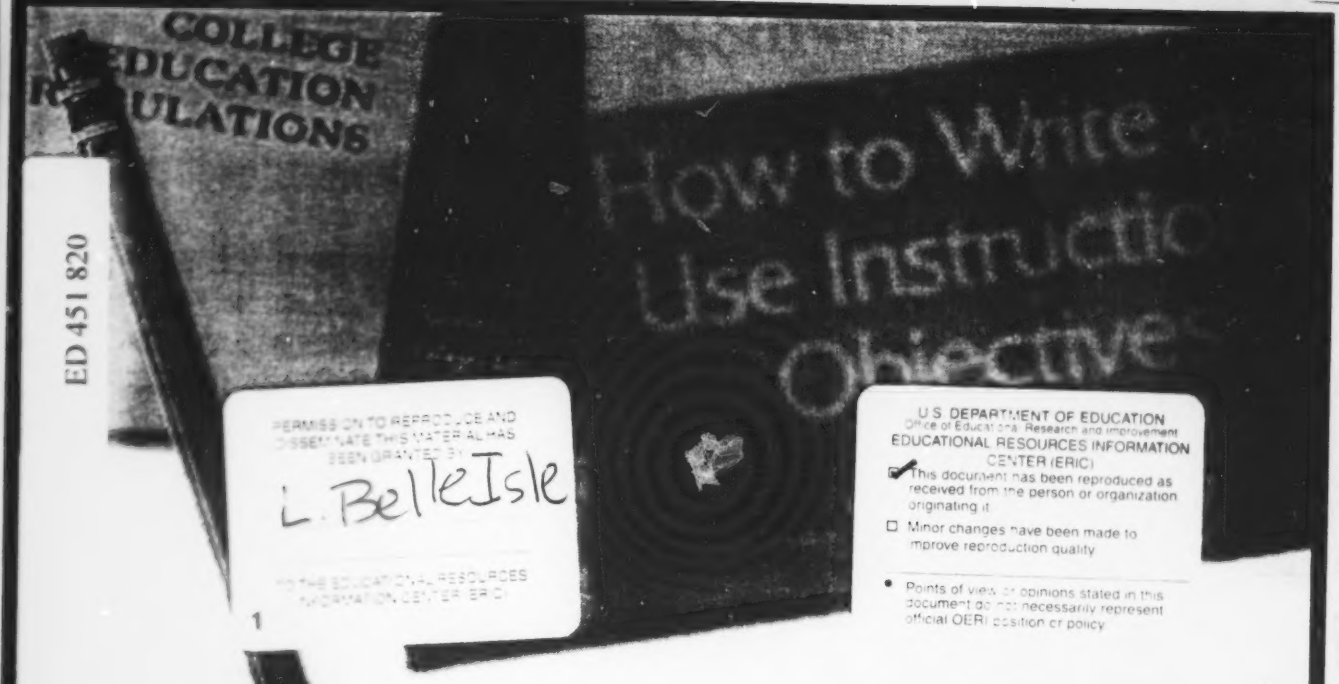

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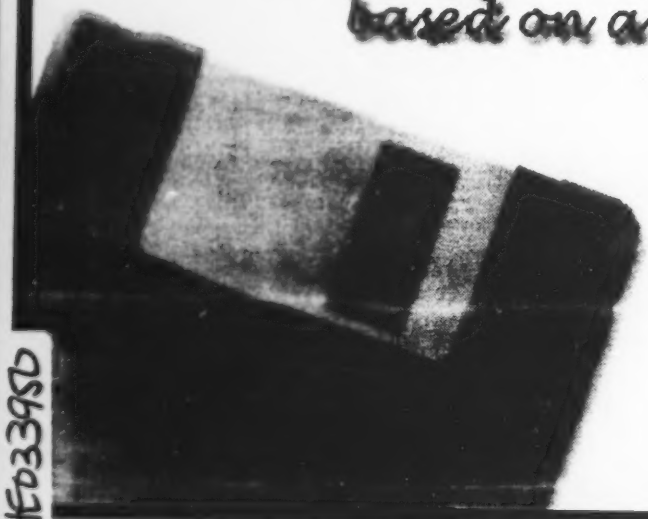
Curriculum Development Guide

based on a technical program



Louis Phillip Belle-Isle

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Published in 2000 by
Breath-by-Breath
P.O. 185 Ville St. Laurent
Quebec, Canada, H4L 4V5
www.raisins@sympatico.ca

Printed by the Vanier College Press
821 Ste. Croix, Ville St. Laurent
Quebec, Canada, H4L 3X9
Tel. (514) 744-7951
Fax (514) 744-7952
www.vaniercollege.qc.ca

Distributed by the Vanier College Bookstore
821 Ste. Croix, Ville St. Laurent
Quebec, Canada, H4L 3X9
Tel. (514) 744-7958
Fax (514) 744-7956
www.vaniercollege.qc.ca

CANADIAN CATALOGUING IN PUBLICATION DATA

Belle-Isle, Louis Phillip
Curriculum Development Guide
ISBN: 2-921024-51-9

1. Collegial education. 2. Curriculum Development. 3. Competency-based education. 4. Technical program. 5. Respiratory Care.

Cover and format: *Breath-by-Breath*
www.raisins@sympatico.ca

Acknowledgements

To three scholars who influenced my professional development: David W. Johnson, who set high standards, Louise Bourgault, who led by example, and Dorothy Wills who's support of student development and success was inspirational. To all three mentors, I offer my appreciation.

To the faculty of the Respiratory & Anaesthesia Technology Program at Vanier College (*Judith A. Csukly, Lois Earle, Sara Engelsberg, Carole Gauthier, Kim A. Kelly, Patricia McClurg, Marie-Hélène Sabbagh,* and *Rita Troini),* to whom I owe a dept of gratitude for their development of the New Curriculum for that program, as well as their devotion to the profession, I offer my sincere thanks.

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Preface

The *Curriculum Development Guide* is offered as a means of assisting educators who have been mandated to develop or modify an educational program's curriculum. The *Guide* presupposes the formulation of an exit-profile and focusses exclusively on post exit-profile activities: The development of a curriculum is based on an exit-profile grounded in verifiable entry-level expectations of the related profession. Consequently, a well developed educational program's exit-profile mirrors the profession's entry-level competencies, and increases the likelihood of graduate abilities matching employer expectations.

The *Guide* is subdivided into two distinct sections: "Section.A: Program Introduction", intended to serve as a formal introduction to the program, and "Section.B: Curriculum Development", intended as a series of steps beginning with the exit-profile competencies translated into learning activities, the formulation of a program grid, and the composition of course outlines.

The format is modelled on a competency-based curriculum, developed for the Respiratory & Anaesthesia Technology Program of Vanier College. The success of this model or any program using a competency-based format, rest primarily on the application of a simplified, user-friendly design and the willingness of the educators to share and promote integration of all learning activities. Pertaining to the design, it should be noted that the micro-learning-activities (listed under each performance criterium) of a course double-up as outcome expectations. In other words, each learning activity is an objective for student assimilation, and for teacher utilization during assessment activities. Integration of learning activities is undertaken in material within a course, as well as those from preceding courses. It is critical for educators, including faculty from affiliated disciplines, to see the integration of material as the driving force for a successful program.

It should also be noted that in light of the nature and the needs of individual programs, no single curriculum development format is absolute ■

Section. A

Program Introduction

This section is intended to serve as an introduction to programs awaiting or undergoing significant transformation. It consists of a brief "Historical Perspective" of the related profession, a program "Mission Statement", and an "Introduction to the Program", including an overview of the ongoing development process and purpose. These elements may also serve as a vehicle for developing a program brochure, a catalogue and a web-site for the introduction of the program to prospective students.

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Historical Perspective

The profession of Respiratory Therapy–also referred to as Respiratory Care–has its roots in a few North American cities, including Montreal. In the early nineteen fifties, in health care facilities such as the Royal Victoria Hospital, select orderlies and porters were required to transport medical gas cylinders and care for related accessories. Shortly thereafter, the number of Oxygen Orderlies (later called Oxygen Therapists) and the duties they inherited, grew exponentially with the onset of ever more sophisticated inhalation equipment. In the mid-1950s, a small group of Montreal based therapists organised themselves into an association thereby setting the foundation for a national society. In the late sixties, the fledging profession adopted a new name, Inhalation Therapy, along with a college based education. Significantly and unique to the practice in Quebec, technical assistance in Anaesthesia was added to the curriculum. In the nineteen eighties, while remaining a predominantly North American phenomenon, the profession took on an international flavour. At the same time, the medical community began to appreciate respiratory therapists and anaesthesia technicians more and more both for their therapeutic expertise and technical abilities. As we enter the new millennium, we find Respiratory Care Practitioners performing a wide range of multi-disciplinary therapeutic and technical procedures. For example, graduates from our program are employed in a critical care unit in Saudi Arabia, an operating room at the Montreal Children's Hospital, a diagnostic lab in Taiwan, or the home of a client-patient in Texas. As well, therapists are finding work in non-traditional areas such as research for manufacturers of pharmaceutical products, as well as in the sales and marketing division of distributors of medical instruments. Approximately 5,000 therapists are currently active in a various capacities, across Canada, applying knowledge and skills with compassion.

Late-1950, Mr. Maurice Roy, Chief Oxygen Therapist, at St. Mary's Hospital in Montreal, administering a medication treatment to a client-patient.

Students practising airway management in a simulated anaesthesia situation in the Respiratory & Anaesthesia Technology labs at Vanier College, in 1992.

Mission Statement

"The Program's mission is to teach the entry-level competencies necessary for effective participation as a Respiratory Therapist within the health care community, while providing opportunities for each student to actualize his/her potential as a unique person and future practitioner."

Introduction to the program

Currently five Quebec colleges[1] offer the Respiratory & Anaesthesia Technology Program (141.AO.) They have offered previous versions of the current program since the late sixties. In the early-nineties, in response to a request from the colleges, the Quebec Ministry of Education initiated a program revision. Utilizing a format modelled on competency-based education (CBE), the revision began with a province wide market study[2]. The study was followed by a detailed analysis of the tasks performed by Respiratory Care Practitioners (RCP)[3]. The analysis and concluding report were subsequently validated province wide, by representatives from health care institutions and associations, as well as by the five colleges. As a result of these studies, a program exit-profile[4] was formulated and a set of competencies for the profession was developed. These competencies were then authenticated by the colleges. The validated profile was distributed by the government to the colleges, who were mandated to develop a new program of study based on the thirteen (13) competencies contained in the profile. As the only college offering the Respiratory & Anaesthesia Technology program in English, Vanier College had the additional task of translating the government documentation from French into English without external funding. Once the English version of the exit-profile and the accompanying documentation became available, the department faculty, in consultation with the faculties from affiliated disciplines, proceeded to analyse the competencies and formulate a set of macro-learning-

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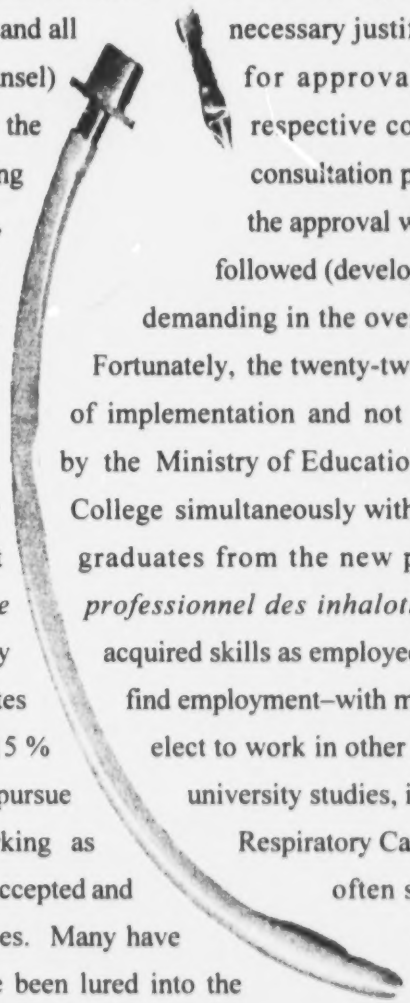
[1] In Quebec colleges are referred to as Cégeps (*Collèges d'enseignement général et professionnel.*)

[2] *Rapport d'analyse de situation de travail. Techniques d'inhalothérapie et d'anesthésie. Version finale. Mai 1992. Gouvernement du Québec. Ministère de l'enseignement supérieur et de la Science. Direction générale de l'enseignement collégial.*

[3] *Rapport de validation. Techniques d'inhalothérapie et d'anesthésie. Mai 1992. Gouvernement du Québec. Ministère de l'enseignement supérieur et de la Science. Direction générale de l'enseignement collégial.*

[4] *Programme d'études 141.AO Techniques d'inhalothérapie. Gouvernement du Québec. Ministère de l'Education. 1997.*

activities. These macro-learning-activities in turn were meticulously analysed, adjusted and validated by the program's Advisory Board. As the foundation for the new program, each of these twenty-two (22) macro- learning-activities were eventually translated into twenty-two different courses. Next, a course framework was developed for each macro-learning-activity. The course framework included the following: course title, pre-requisites, course description, course number, statement of competence, achievement context, ponderation and number of credits, related exit-profile competency(ies), as well as a series of elements-of-competence and performance criteria. Once completed, these documents, along with a program grid and all necessary justifications, were presented to the college (Academic Counsel) for approval–before the department could proceed to develop the respective course outlines. Thanks to the extensive and ongoing consultation process in place with the program's affiliated hospitals, the approval was granted with minimal delay. The step which followed (development of course outlines) proved to be the most demanding in the overall process of developing a new program. Fortunately, the twenty-two courses were developed in their respective sequence of implementation and not all at once. In August of 1997, following ratification by the Ministry of Education, the 141.AO program was implemented at Vanier College simultaneously with the four other colleges. In June of 2000, the first graduates from the new program were licensed by the provincial Order (*Ordre professionnel des inhalothérapeutes du Québec*), and began to apply their newly acquired skills as employees of health care facilities. Most of the program graduates find employment–with minimal delay–in the greater Montreal area. Less than 15 % elect to work in other provinces, and approximately 10 % concurrently pursue university studies, in either related or unrelated disciplines, while working as Respiratory Care Practitioners. Graduates from this program are well accepted and often sought after by recruiting officers from other provinces. Many have become technical directors, while others have been lured into the sales and marketing branch of health care.■



Section. B

Curriculum Development

This section involves a series of steps intended to provide guidance in curriculum development, beginning with conversion of the exit-profile competencies into learning activities, culminating with the writing of course outlines. In addition, a verification mechanism is inserted to assure that the proposed curriculum is feasible, and that it conforms to the provincial exit-profile and the expectations of the college affiliated clinical sites. Referred to as "validation-checks", this mechanism ensures that the directions embraced by the faculty, including course outline content, is well grounded and supported in the literature and government documentation. Once the program is implemented, the validation-checks must remain in place in order to maintain validity and viability.

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STEPS

Developing an exit-profile.

Currently, the Quebec Ministry of Education assumes the responsibility for all activities related to the development of an exit-profile (also referred as outcome-profile), as well as the issuance of a program development mandate to the prospective colleges. Nevertheless, a college may be asked by the Ministry to participate in the process. The steps related to the development of an exit-profile are:

- Justifying the need to develop/modify a program.
- Conducting a market survey to confirm the need.
- Conducting a job analysis to identify the nature and frequency of tasks performed by graduates of the program..
- Formulating a profile of those tasks and seeking confirmation from various sectors with a justifiable interest and involvement in the program.
- Formulating a program exit-profile, a mandate, and validation of the exit-profile by the colleges offering the program.
- If applicable translating the mandate and the exit-profile from French to English.

Each college offering a given program then receives the same mandate and exit-profile.

Developing a curriculum.

Since the college is normally consulted at various stages during the development of an exit-profile, validation of the mandate and the exit-profile can be anticipated. Thus, it would seem advisable to draft a curriculum development proposal, including a request for faculty release time and funding to undertake the developmental work necessary. The proposal should take into consideration the steps outlined as follows and the need to apply validation checks (V✔)* at each pivotal stage. The following steps are related to the development of a curriculum:

Step.1 Establishing a working team (committee) and developing an operational plan in accordance with steps 2 through 14, based on the unique character and needs of the program.

Step.2 Analysing the mandate to determine the Ministry's expectation and the application framework: Obligations, orientations and pedagogical requirements need to be underlined and examined.

Step.3 Translating the exit-profile competencies into a set of macro learning-activities**, each articulated as a statement of competence and accompanied by a series of related elements. In turn, each of these macro-learning-activities will evolve into a course. Note, that despite the wish, by some academic purists, to have each profile competency dispensed in one course, experience has shown this to be impossible in many cases. Rather, it is more than likely that a given profile competency will have roots in more than one course. As well, a given course may be linked to more than one competency.

Step.4 Designing a schematic reflection of the macro-learning-activities in order of application over 6 semesters (see page XXIII.)

Step.5 Seeking validation from an (unbiased) external body for the work completed, e.g.; Program Committee and/or Advisory Board, and applying recommendations. V✔

Step.6 Designing a program grid and a listing of equivalencies between the old and the new program (see pages XXV - XXX.)

Step.7 Developing a course framework for each macro-learning-activity: Course title, course description, statement of competence, achievement context, ponderation and number of credits, associated exit-profile competencies , and a series of performance criteria for each element of the competence (see pages XXXIII - XXXVI.)

Step.8 Seeking validation for the program grid and the course frameworks from the Program Committee and/or Advisory Board, and applying ensuing recommendations. V✔

Step.9 Developing a conceptual framework for stage courses (if applicable) and seeking validation from program affiliated external sites (see Annex-B Memorandum of Understanding). V✔

Step.10 Formulating and polishing explanations and justifications needed to respond to questions/concerns most likely to surface while pursuing official approval from the college.

Step.11 Seeking college approval for application of the new curriculum via Program Curriculum Committee, College Program Committee, Faculty Program Committee, Academic Counsel and Board of Directors. V✔

Step.12 Developing the course outlines, based on the course framework previously developed for each macro-learning-activity. Using each course framework, adding a set of performance criteria under each element-of-the-competence, then elaborating each performance criteria with its own list of corresponding micro-learning-activities (see pages XXXVII- XXXVIII & Annexe-A)

Step.13 Seeking validation from a faculty committee for each course (syllabus) outline. V✔

Step.14 Though not essential, regrouping the content (only) of each course outline into a single document, referred to as the program's Master Curriculum, could prove useful for ongoing consultation ■

* ***Validation-checks*** *are also referred to as justification checks. These are mechanisms adopted at every critical step in the development of a curriculum. It involves the consultation by faculty members. college administrators and/or representatives from affiliated clinical sites (such as an Advisory Board), before either adopting something new or instituting a change. The application of a validation-check is confirmed with the symbol* V✔.

** ***Macro learning-activities*** *are synonymous with program learning-activities and course titles.*

PROGRAM

MACRO LEARNING-ACTIVITIES

The enclosed documentation identifies 22 "Program Learning-Activities." These "activities" represent the pedagogical interpretation of the "1997 Provincial Program Outcome-Profile" by the Respiratory & Anaesthesia Technology Faculty. Further, as mandated by the college administration, the "November 1996, National Occupation Profile " was consulted during the interpretation phase, in order to assure that the "New Program" will also meet the national objectives and standards. At this point in time, the importance of each learning activity (to be further developed into a course framework) must be stressed to all concerned parties. As will be observed in the following pages, each learning activity is composed of a *Statement of Competence*, a *Course Title*, and a *Listing of Elements* intended to specify all components essential for the competence. The verb used to express either a competence or an element, was carefully selected. It relates directly to the nature of the outcome, the level of complexity, and the relative importance of each element. Further, it contains only the activities directly associated with the profession. It should be remembered, that a significant portion of the overall program (approximately one-fourth) is associated with general education. For an overall review of the program's competencies/objectives (education of the professional and the person), please refer to the "Program Outcome-Profile".

This document, the 6th edition, was modified in light of recent changes to the Provincial Program Outcome-Profile and the release of a new edition of the National Occupational Profile. The changes are relatively minor and few, and involve mostly the transfer of elements between learning-activities and/or a change in the wording of elements. The changes involve the following learning activities: 01, 02, 03, 05, 10, 11, 13, 14 & 22. Since the third edition (dated September 25, 1996) was approved by all parties (Faculty and Advisory Board on February 19-20, 1996, and the College on March 29, 1996) and that the enclosed changes are minor in nature and reflect mostly a preoccupation with scheduling restrictions, this latest edition (ratified by the 141.AO Faculty on May 17, 1998) is distributed to inform all parties involved in the approval process.

Notice: *This profile is intended as a "living document", a concept that favours a continuous evolution. Once this New Program is in place (anticipated date, September 1997) and all learning activities have been applied, an on-going assessment process will be instituted in order to continuously adjust the program's direction and content. This process will be directed by the Faculty in consultation with the Advisory Board. Any change to the following will require approval of both parties.*

SPECIFIC QUESTIONS & CONCERNS
ADVISORY BOARD POSITION AND RECOMMENDATIONS

1. The basic sciences (**Biology and Chemistry**) as presented imply an overall reduction in available time to those departments to teach our students. We have carefully reviewed this situation and compared the old program with other Canadian colleges in terms of hours, content and student performance. We conclude that the suggested modification (concentrate on fewer but essential objectives–needing less total time) is justifiable and warranted. How do you perceive our recommendation?

The Board unanimously supports the adoption of a concentrated content for biology and chemistry, with emphasis on the essential objectives (elements) as outlined in learning activities 04 and 08, with the addition of the word "function" to element number 4 in activity 04.

2. The **pharmacology** was not assigned to a single learning activity. Rather, we recommend (as presented) that each relevant element be inserted within an appropriate learning activity. Thus, the drugs primarily associated with respiratory care appear under (07), the drugs associated with the cardiovascular system under (10), and those directly related to anaesthesia under (16). In so doing, we aim to teach pharmacology in a setting where the student can immediately develop links between a specific drug and a procedure/therapy. How do you perceive this arrangement?

The Board unanimously supports the teaching of pharmacology in divided portions, each affiliated to a related practice.

3. Is **clinical experience in pediatric anaesthesia** essential at entry level? and if it is, will we be able to apply it in our affiliated hospitals? You may wish to consider whether our graduates have been disadvantaged with a clinical training focussed exclusively on adult anaesthesia . . . either way, we are obligated to maintain a theory and lab component in pediatric anaesthesia in our college based courses.

It was stated that our recent graduates–based on recent experience–are not penalized by a lack of clinical exposure to pediatric anaesthesia. The Board stated that it was not absolutely necessary for the program to include a clinical rotation specific to pediatric anaesthesia. The present system (one day visit within the neonatal & pediatric respiratory care rotation) is sufficient and could be expanded to two days.

4. We expected **home care** to grow with leaps and bounds with the restructuring of the Quebec health care system. How important is it for graduating RT to have some knowledge of home care and possibly some **clinical exposure**?

A variety of opinions were expressed regarding the future of home care in Quebec. In summary, it is not possible to clearly outline the provincial direction in terms of use and types of alternative clinical sites.

Based on the absence of a consensus, the Board recommended that the college assure a strong theoretical education supported by a minimal clinical exposure (one or two days in a home care setting).

5. Should we include **visits to an asthma clinic** in order for students to gain an overall understanding and appreciation of the profession's role in this relatively new market.

As outlined in number five, the Board recommended a short clinical exposure of one or two days.

6. **Nutritional assessment/metabolic testing** is included in the provincial profile and is thus prescriptive. Clinically we must either incorporate it in a clinical critical care rotation or in a cardiopulmonary function testing rotation. What are the advantages and disadvantages of either? and, what would be the better method?

Concern was expressed regarding any section that would be directly associated with nutritional assessment. It would be in direct conflict with the responsibilities delegated to dietitians. In light of this concern, the Board recommended that the related elements (both theoretical and clinical) be limited to metabolic testing.

7. **Sleep studies** is a relatively small market for our profession. None-the-less, we feel that it is an important market and we wish to give our students an advantage by incorporating it in one of our clinical stage courses. Do you agree? and if you do, is it feasible in some of our existing clinical affiliates?

The Board supports the inclusion of theoretical and clinical objectives associated with sleep studies and members assured all present that it would be possible to dispense short clinical exposures (one or two days) during day-time rotations only–no need to schedule students on nights.

8. In relation to learning activity 10, is the teaching of ACLS essential for our students at market-entry level?

The Board unanimously agrees that ACLS is absolutely essential at entry level. One member suggested that it would be nice for the teacher to be certified for both BLS and ACLS. Should they wish to, this would permit our students to apply for certification.

9. In terms of the **immediate future**, can you foresee a new direction, a new therapeutic procedure or, some form of administrative restructuring that might have a significant impact on your profession and force its practice to adjust?

The Board members will consider possible new directions and will contact the program coordinator during the next two weeks should they wish to recommend other changes or additions to the document distributed on January 29. The coordinator did not receive any recommendation, either before or after the deadline.

FORMAT

Number in sequence - Faculty - Course Title
Statement of Competence
Elements of the Competence

Abbreviations:

BIO	**BIOLOGY FACULTY**
CHEM	**CHEMISTRY FACULTY**
CT	**COURSE TITLE**
PSY	**PSYCHOLOGY**
R&A	**RESPIRATORY&ANAESTHESIA FACULTY**
SC	**STATEMENT OF COMPETENCE**

01 - R&A INTRODUCTION TO THE PROFESSION (CT)

DEFINE THE DEPTH AND SCOPE OF THE PROFESSION OF RESPIRATORY & ANAESTHESIA TECHNOLOGY AND APPLY RULES AND PROCEDURES RELATED TO HEALTH AND SAFETY IN A SIMULATED ENVIRONMENT.(SC)

Elements of the competence

1. Describe the historical development of Respiratory & Anaesthesia Technology.
2. Describe the nature, the scope, the areas of practice.
3. Examine the various tasks that are delegated to the practitioner.
4. Discuss the philosophy of professional responsibility, accountability and ethics.
5. Define the educational process specific to this program.
6. Identify the professional associations, boards, and societies in North America.
7. Demonstrate basic safety techniques in client-patient movement and ambulation.
8. Demonstrate basic client-patient safety and welfare procedures.
9. Demonstrate safe use of electrical components.
10. Describe basic considerations regarding fire safety.
11. Apply infection control measures.
12. Describe environmental factors affecting health and safety.
13. Describe the importance of communication in providing safe and effective care to the client-patient.
14. Define what is meant by a Quality Assurance Program.
15. Describe the elements associated with disease prevention and health care.

02 - R&A BASIC INSTRUMENTATION (CT)

APPLY FUNCTIONAL CONCEPTS RELATED TO INSTRUMENTATION. (SC)

Elements of the competence

1. Apply the gas laws.
2. Demonstrate use of medical gas supply-systems.
3. Regulate the pressure and flow of medical gases.
4. Measure the volume and flow of gases.
5. Analyse the concentration of medical gases.
6. Control the temperature of medical gases.
7. Differentiate between types of humidity and aerosol generators.
8. Understand the principles related to the transmission, sensing and recording of sound.
9. Explain the basic principles related to the transmission, sensing and recording of light.

03 - BIO R&A ANATOMY AND PHYSIOLOGY - I (CT)

APPLY DETAILED KNOWLEDGE OF THE RESPIRATORY CARDIOVASCULAR AND NERVOUS SYSTEMS. (SC)

Elements of the competence

1. Describe the general organization of the human body.
2. Describe the major function of cells and tissues.
3. Describe the function of the nervous system.
4. Describe the function of the respiratory system.
5. Describe the function of the cardiovascular system.
6. Describe the components of the blood and their functions.

04 - CHE HEALTH SCIENCE CHEMISTRY (CT)

APPLY KNOWLEDGE RELATED TO BASIC HEALTH SCIENCE CHEMISTRY.(SC)

Elements of the competence

1. Understand basic concepts of chemistry.
2. Understand the functions of the human cells.
3. Explain the chemistry of cellular metabolism of the major nutrients.
4. Explain the chemistry of nerve conduction (neurotransmission).
5. Explain the chemistry of muscle contraction, its byproducts and their side effects.
6. Explain the characteristics of enzymes.
7. Comprehend blood chemistry.
8. Understand body fluid regulation.
9. Explain the basic nutritional requirements.

05 - R&A PULMONARY FUNCTION TESTING AND DIAGNOSTICS (CT)

APPLY PULMONARY FUNCTION TESTING AND DIAGNOSTIC PROCEDURES IN A SIMULATED ENVIRONMENT. (SC)

Elements of the competence

1. Describe normal pulmonary diagnostic imaging.
2. Apply pre-test equipment preparations.
3. Prepare the client-patient for testing or monitoring.
4. Measure lung volumes and capacities.
5. Evaluate spirometry and pulmonary mechanics.
6. Perform diffusion testing.
7. Perform gas distribution testing.
8. Describe protocols associated with specialized testing.
9. Describe metabolic testing.
10. Perform post test activities.

06 - R&A RESPIRATORY CARE (CT)

APPLY BASIC RESPIRATORY CARE PROCEDURES IN A SIMULATED ENVIRONMENT. (SC)

Elements of the competence

1. Apply effective medical communication methods.
2. Apply basic cardiopulmonary assessment skills.
3. Administer medical gases.
4. Provide humidity/aerosol therapy.
5. Perform chest physical therapy and rehabilitation procedures.
6. Apply methods of airway management.
7. Apply pulmonary airway suction and chest drainage.
8. Develop a respiratory care plan.
9. Describe the general principles of pharmacology.
10. Describe the effects and mode of action of respiratory drugs.

07 - BIO R&A ANATOMY AND PHYSIOLOGY - II (CT)

APPLY KNOWLEDGE AND PRINCIPLES RELATED TO GENERAL ANATOMY AND PHYSIOLOGY. (SC)

Elements of the competence

1. Explain the function of the integumentary system.

2. Describe the function of the musculo-skeletal system.
3. Describe the basic functions of the immune system.
4. Describe the functional principles of the digestive system.
5. Describe the function of endocrine system.
6. Describe the anatomy of the renal system.
7. Describe the normal development of the pulmonary and cardiopulmonary systems in a human.

08 - R&A BLOOD GASES (CT)

ASSESS CLIENT BLOOD GASES IN A SIMULATED SITUATION. (SC)

Elements of the competence

1. Describe common sampling and monitoring techniques for blood gases values.
2. Explain physiological concepts related to oxygenation, external respiration, oxygen transport and internal respiration.
3. Explain physiological concepts related to acid-base balance.
4. Interpret blood gas values.
5. Evaluate clinical oxygenation.
6. Compare concepts of non-invasive blood gas monitoring.
7. Assure the quality and validity of the administration of oxygen, carbon dioxide and heliox.

9 - R&A CARDIOVASCULAR DIAGNOSTICS & MONITORING (CT)

APPLY CARDIOPULMONARY RESUSCITATION AND CARDIOVASCULAR MONITORING AND DIAGNOSTIC PROCEDURES IN A SIMULATED SITUATION. (SC)

Elements of the competence

1. Monitor pulse heart rate and arterial blood pressure using non-invasive methods.
2. Apply invasive cardiovascular monitoring techniques.
3. Perform electrocardiogram recording procedures at rest.
4. Perform electrocardiogram recording procedures during exercise.
5. Compare drugs which impact on the cardiovascular system.
6. Analyse adult advanced cardiac life support (ACLS) in a simulated situation, in accordance with the standards of the Canadian Heart and Stroke Foundation.

10 - R&A MECHANICAL VENTILATORS (CT)

PREPARE A MECHANICAL VENTILATOR FOR USE ON A CLIENT-PATIENT. (SC)

Elements of the competence

1. Conceptualize what a ventilator *IS*.
2. Compare the ventilator controls and their relationship.
3. Demonstrate the function and application of ventilator alarms.
4. Describe the modes of mechanical ventilation and conditional variables.
5. Evaluate ventilator waveforms.
6. Differentiate between representative mechanical ventilators.

11 - R&A DISEASES & DISORDERS (CT)

APPLY KNOWLEDGE OF PATHOPHYSIOLOGY IN RELATION TO CARDIO-RESPIRATORY RESPONSE. (SC)

Elements of the competence

1. Apply a systematic approach to the study of disorders and diseases.
2. Compare obstructive airway disorders.
3. Compare restrictive disorders.
4. Compare environmental and inhalation disorders.
5. Differentiate between pleural and thoracic disorders.
6. Differentiate between infectious disorders
7. Describe aspiration disorders.
8. Describe neoplastic disorders.
9. Describe the central nervous system (CNS) and neuro-muscular disorders.
10. Compare cardiovascular disorders.
11. Discuss hematological disorders as related to oxygenation.
12. Describe pulmonary vascular disorders.
13. Describe acute and chronic renal failure.

12 - PSY PSYCHOLOGY IN HEALTH CARE (CT)

ESTABLISH A SUPPORTIVE RELATIONSHIP WITH CLIENT-PATIENTS AND MEMBERS OF THE HEALTH CARE TEAM. (SC)

Elements of the competence

1. Use various methods to deal constructively with personal emotions.
2. Resolve interpersonal conflicts within the working environment.
3. Collaborate with members of the health care team.
4. Manage stress.
5. Evaluate the emotional state of the client-patient.

6. Intervene on behalf of the client-patient.

13 - R&A CLINICAL RESPIRATORY CARE -I (CT)
14 - R&A CLINICAL RESPIRATORY CARE -II (CT)

PERFORM BASIC RESPIRATORY CARE PROCEDURES ON CLIENT-PATIENTS. (SC)

Elements of the competence

1. Apply effective oral and written communication.
2. Apply procedures with respect to Workplace Hazardous Material Information System (WHMIS) regulations.
3. Apply infection control precautions.
4. Clean and disinfect equipment.
5. Assess client-patient.
6. Interpret results from blood analysis.
7. Provide oxygen therapy.
8. Provide humidity and aerosol therapy.
9. Perform suction therapy.
10. Perform sputum induction/collection procedures.
11. Describe technical assistance during bronchoscopy.
12. Assume technical assistance during bronchoscopy.
13. Perform chest physical hygiene.
14. Interpret pulmonary images.
15. Perform non-invasive monitoring.
16. Describe sleep studies and monitoring procedures.
17. Compare sleep disorders.
18. Provide assistance during sleep study.
19. Evaluate basic Respiratory Care clinical case studies.
20. Apply procedures and skills specific to Asthma Clinics.
21. Explain the fundamental principles and skills specific to Home (Respiratory) Care.
22. Explain the fundamental physiology and care associated with Hypobaric and Hyperbaric conditions.
23. Function as a professional.

15 - R&A ARTIFICIAL PULMONARY VENTILATION (CT)

MATCH THE VENTILATORY SUPPORT TO THE ADULT CLIENT-PATIENT NEEDS IN A SIMULATED SITUATION. (SC)

Elements of the competence

1. Demonstrate the safe use of breathing circuits.
2. Assume ventilator maintenance.
3. Describe the effects of mechanical ventilation on the client-patient.
4. Analyse the clinical indications for the use of mechanical ventilation.

5. Link therapeutic intervention to a physical disorder.
6. Assess immediate client-patient response to ventilatory support.
7. Assess client-patient's respiratory function during mechanical ventilation.
8. Rationalize altering parameters in response to aberrant physiological reactions.
9. Minimize the harmful effects of mechanical ventilation.
10. Compare the clinical indications for invasive vs non-invasive mechanical ventilation.
11. Apply means of discontinuation from mechanical support.
12. Discuss additional management techniques for ventilated client-patients.

16 - R&A ANAESTHESIA TECHNOLOGY (CT)

PERFORM TECHNICAL ASSISTANCE DURING ANAESTHESIA IN A SIMULATED SITUATION. (SC)

Elements of the competence

1. Compare gases and vapours used in anaesthesia.
2. Compare drugs used in anaesthesia.
3. Demonstrate the correct use of a continuous flow anaesthesia machine.
4. Demonstrate the use of anaesthesia breathing systems.
5. Demonstrate the function of anaesthesia ventilators.
6. Apply knowledge of Operating Room Anti-Pollution Systems.
7. Perform preoperative procedures in a simulated situation.
8. Assist in the induction of anaesthesia in a simulated situation.
9. Assume the maintenance of anaesthesia in a simulated situation.
10. Describe emergence form anaesthesia in a simulated situation.
11. Describe regional anaesthesia.
12. Demonstrate transport of the client to the Post-0perative Recovery Room in a simulated situation.
13. Perform basic equipment maintenance.

17 - R&A NEONATAL & PEDIATRIC RESPIRATORY CARE (CT)

APPLY KNOWLEDGE OF PATHOPHYSIOLOGY AND TECHNICAL PROCEDURES IN RELATION TO THE NEEDS OF THE NEONATAL AND PEDIATRIC POPULATION. (SC)

Elements of the competence

1. Apply basic notions of obstetrics as related to neonatal respiratory care.
2. Associate a therapeutic procedure to a cardiopulmonary disorder or other related disorder, in a child or neonate.
3. Apply medical gas therapy to the neonatal and pediatric population.
4. Apply knowledge of pharmacology.
5. Apply humidity and aerosol therapy to the neonatal and pediatric population.

6. Apply airway management techniques to the neonatal and pediatric population.
7. Apply mechanical ventilation techniques to the neonatal and pediatric population.

18 - R&A CLINICAL PULMONARY FUNCTION TESTING (CT)

PERFORM PULMONARY FUNCTION TESTS ON CLIENT-PATIENTS. (SC)

Elements of the competence

1. Adapt to professional life.
2. Apply health and safety procedures.
3. Conduct pre and post testing activities.
4. Perform routine pulmonary function tests on client-patients.
5. Assist with specialized testing regiments on client-patients.

19 - R&A CLINICAL CRITICAL CARE (CT)

PERFORM RESPIRATORY CARE PROCEDURES ON CLIENT-PATIENTS IN A CRITICAL CARE UNIT. (SC)

Elements of the competence

1. Adapt to professional life.
2. Apply health and safety procedures.
3. Conduct pre and post treatment/technique activities.
4. Administer medical gases.
5. Provide humidity and aerosol therapy.
6. Apply airway management.
7. Perform non-invasive monitoring.
8. Institute ventilatory support.
9. Maintain adequate level of ventilatory support.
10. Discontinue client-patient from ventilatory support.
11. Perform cardiopulmonary resuscitation.

20 - R&A CLINICAL ANAESTHESIA (CT)

ASSUME TECHNICAL ASSISTANCE IN ANAESTHESIA, IN A CLINICAL SETTING. (SC)

Elements of the competence

1. Adapt to professional life.
2. Apply health and safety procedures.
3. Prepare appropriate equipment.
4. Prepare the client-patient of anaesthesia.

5. Assist anaesthesiologist with a regional block.
6. Assist anaesthesiologist during induction of general anaesthesia.
7. Assist anaesthesiologist with the maintenance of anaesthesia.
8. Assis anaesthesiologist with the emergence from anaesthesia.
9. Conclude procedure

21- R&A CLINICAL NEONATAL & PAEDIATRIC RESPIRATORY CARE (CT)

PERFORM NEONATAL AND PEDIATRIC RESPIRATORY CARE IN A CLINICAL SETTING. (SC)

Elements of the competence

1. Adapt to professional life.
2. Apply health and safety procedures.
3. Conduct pre and post treatment/technique activities.
4. Administer medical gases.
5. Provide humidity and aerosol therapy.
6. Apply knowledge of pharmacology.
7. Apply airway management procedures to the neonatal and pediatric populations.
8. Perform non-invasive monitoring.
9. Institute ventilatory support.
10. Maintain adequate level of ventilatory support.
11. Discontinue client-patient from ventilatory support.
12. Perform cardiopulmonary resuscitation.

22 - R&A CASE STUDIES & RESEARCH (CT)

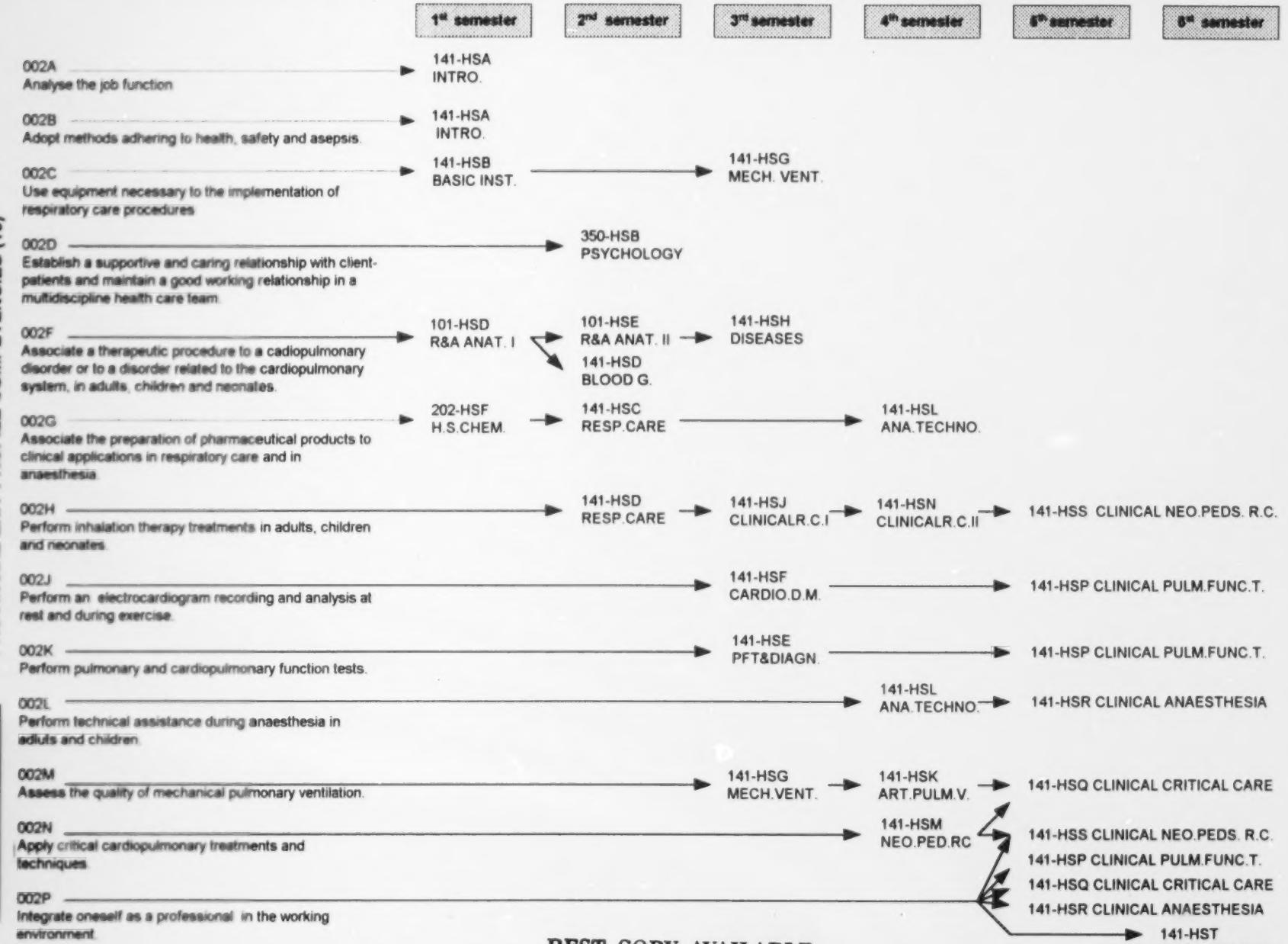
ASSESS THERAPEUTIC AND SUPPORT PROCEDURES ASSOCIATED WITH THE PROFESSION. (SC)

Elements of the competence

1. Describe the common elements of a research study.
2. Synthesize the elements necessary to interpret and develop case studies related to the profession.
3. Develop a complex case study related to the profession.
4. Present a complex case study related to the profession.

RELATIONSHIP BETWEEN EXIT-PROFILE COMPETENCIES AND PROGRAM (22) COURSES

PROVINCIAL EXIT-PROFILE COMPETENCIES (13)



Section B Plan XXII

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Vanier College - 141.AO Respiratory & Anaesthesia Technology Program

SEQUENCE OF PROGRAM 'COURSES' LEARNING ACTIVITIES

MC Sequence of courses (grid) 42000

1st Semester
English (A) Humanities Complementary
141-HSA-04 Introduction to the Profession
141-HSB-05 Basic Instrumentation
101-HSD-06 R.A. Anatomy & Physiology I
202-HSF-05 Health Science Chemistry
2nd Semester
English (A) French (A) Complementary Physical Education
141-HSC-06 Respiratory Care
350-HSB-03 Psychology in Health Care
101-HSE-06 R.A. Anatomy & Physiology II
141-HSD-03 Blood Gases
3rd Semester
English (B) French (B) Humanities
141-HSJ-06 Clinical Respiratory Care I
141-HSG-05 Mechanical Ventilators
141-HSE-04 Pulmonary Function Testing & Diagnostics
141-HSH-03 Diseases & Disorders
141-HSF-05 Cardiovascular Diagnostics & Monitoring
4th Semester
English (A) Humanities (B) Physical Education
English Exit-Exam
141-HSN-06 Clinical Respiratory Care II
141-HSK-05 Artificial Pulmonary Ventilation
141-HSM-05 Neonatal & Pediatric Respiratory Care
141-HSL-05 Anaesthesia Technology
5th & 6th Semesters
Physical Education
141-HST-04 Case Studies & Research
141-HSQ-18 Clinical Critical Care
141-HSP-10 Clinical Pulmonary Function Testing
141-HSS-10 Clinical Neonatal & Pediatric Respiratory Care
141-HSR-18 Clinical Anaesthesia
Épreuve synthèse de programme (Program Exit-Assessment)

Courses Per Exit-Profile Competency

Provincial Profile Competencies		Vanier 141.AO Program Courses	
002A	Analyse the Job Function.	141-HSA-04	Introduction to the Profession.
002B	Adopt Methods Adhering to Health, Safety and Asepsis.	141-HSA-04	Introduction to the Profession.
002C	Use Equipment Necessary to the Implementation of Respiratory Care Procedures.	141-HSB-05 141-HSG-05	Basic Instrumentation. Mechanical Ventilators.
002D	Establish a Supportive and Caring Relationship with Client-Patients and Maintain a Good Working Relationship in a Multidiscipline Health Care Team.	350-HSB-03	Psychology in Health Care.
002F	Associate a Therapeutic Procedure to a Cardiopulmonary Disorder or to a Disorder Related to the Cardiopulmonary System, in Adults, Children and Neonates.	101-HSD-06 101-HSE-05 141-HSD-03 141-HSH-03	R&A Anatomy & Physiology -I. R&A Anatomy & Physiology -II. Blood Gases. Diseases & Disorders.
002G	Associate the Preparation of Pharmaceutical Products to Clinical Applications in Respiratory Care and in Anaesthesia.	202-HSF-05 141-HSC-06 141-HSL-06	Health Science Chemistry. Respiratory Care. Anaesthesia Technology.
002H	Perform Inhalation Therapy Treatments in Adult, Children and Neonates.	141-HSC-06 141-HSJ-06 141-HSN-06 141-HSS-10	Respiratory Care. Clinical Respiratory Care -I. Clinical Respiratory Care -II. Clinical Neonatal & Pediatric Respiratory Care.
002J	Perform an Electrocardiogram Recording and Analysis at Rest and During Exercise.	141-HSF-05 141-HSP-10	Cardiovascular Diagnostics & Monitoring. Clinical Pulmonary Function Testing.
002K	Perform Pulmonary and Cardiopulmonary Function Tests.	141-HSE-04 141-HSP-10	Pulmonary Function Testing & Diagnostics. Clinical Pulmonary Function Testing.
002L	Perform Technical Assistance During Anaesthesia in Adults and Children.	141-HSL-05 141-HSR-18	Anaesthesia Technolgy. Clinical Anaesthesia.
002M	Assess the Quality of Mechanical Pulmonary Ventilation.	141-HSG-05 141-HSK-05 141-HSQ-18	Mechanical Ventilators. Artificial Pulmonary Ventilation. Clinical Critical Care.
002N	Apply Critical Cardiopulmonary Treatments and Techniques.	141-HSM-05 141-HSQ-18 141-HSS-10	Neonatal & Pediatric Respiratory Care. Clinical Critical Care. Clinical Neonatal & Pediatric Respiratory Care.
002P	Integrate Oneself as a Professional in the Working Environment.	141-HSP-10 141-HSQ-18 141-HSR-18 141-HSS-10 141-HST-04	Clinical Pulmonary Function Testing. Clinical Critical Care. Clinical Anaesthesia. Clinical Neonatal & Pediatric Respiratory Care. Case Studies & Research.

Cégep Vanier College

Respiratory & Anaesthesia Technology Program

Program 141.AO Grid

Each course is listed by identification number, name, ponderation, number of credits, total teaching hours (theory + labs/clinical), recommended study hours per week, and is followed by its absolute prerequisite(s) and/or co-requisite(s).

FIRST YEAR

FIRST SEMESTER

	English	2-2-4	2 2/3	60	120	
	Humanities	4-0-3	2 1/3	60	105	
	Complementary	3-0-3	2	45	90	
		9-2	7	165	315	
101-HSD-06	R&A Anatomy & Physiology -I	4-2-3	3	90	135	(Admission to 141.AO)
141-HSA-04	Introduction to the Profession	2-2-2	2	60	90	(Admission to 141.AO)
141-HSB-05	Basic Instrumentation	2-3-2	2 1/3	75	105	(Admission to 141.AO)
202-HSF-05	Health & Science Chemistry	3-2-2	2 1/3	75	105	(Admission to 141.AO)
First Semester Totals		20-11	16 2/3	465	750	

SECOND SEMESTER

	English	2-2-3	2 1/3	60	105	
	French	3-0-3	2	45	90	
	Physical Education	0-2-1	1	30	45	
	Complementary	3-0-3	2	45	90	
		8-4	7 1/3	180	330	
101-HSE-05	R&A Anatomy & Physiology-II	5-0-3	2 2/3	75	120	PA 101-HSD-06
141-HSC-06	Respiratory Care	3-3-3	3	90	135	PA 101-HSD-06 & PA 141-HSA-04 & PA 141-HSB-05
141-HSD-03	Blood Gases	2-1-2	1 2/3	45	75	PA 101-HSD-06 & PA 202-HSF-05
350-HSB-03	Psychology in Health Care	3-0-2	1 2/3	45	75	No Prerequisite
Second Semester Totals		21-8	16 1/3	435	735	
First Year Totals		41-19	33	900	1,485	

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SECOND YEAR

THIRD SEMESTER

	English (B)	2-2-2	2	60	90	
	Humanities	3-0-3	2	45	90	
	French (B)	3-0-3	2	45	90	
		8-2	6	150	270	
141-HSE-04	PFT & Diagnostics	2-2-2	2	60	90	PA 101-HSE-05 & PA 141-HSB-05
141-HSF-05	Cardiovascular Diagnostics & Monitoring	3-2-2	2 1/3	75	105	PA 141-HSB-05 & PA 141-HSC-06
141-HSG-05	Mechanical Ventilators	2-3-3	2 2/3	75	120	PA 141-HSB-05
141-HSH-03	Diseases & Disorders	3-0-3	2	45	90	PA 141-HSD-03
141-HSJ-06	Clinical Respiratory Care -I	1-5-1	2 1/3	90	105	PA 141-HSC-06 & PA 350-HSB-03 & CR 141-HSE-04
Third Semester Totals		19-14	17 1/3	495	780	

FOURTH SEMESTER

	English	2-2-3	2 1/3	60	105	
	Humanities (B)	3-0-3	2	45	90	
	Physical Education	1-1-1	1	30	45	
		6-3	5 1/3	135	240	
141-HSK-05	Artificial Pulmonary Ventilation	3-2-3	2 2/3	75	120	PA 141-HSG-05 & PA 141-HSH-03
141-HSL-05	Anaesthesia Technology	3-2-3	2 2/3	75	120	PA 141-HSF-05
141-HSM-05	Neonatal & Pediatric Resp. Care	2-3-2	2 1/3	75	105	PA 141-HSG-05 & PA 141-HSH-03
141-HSN-06	Clinical Respiratory Care -II	1-5-1	2 1/3	90	105	PA 141-HSJ-06
Fourth Semester Totals		15-15	15 1/3	450	690	
Second Year Totals		34-29	32 2/3	945	1,470	

THIRD YEAR

FIFTH & SIXTH SEMESTER

	Physical Education	1-1-1	1	30	45	
141-HSP-10	Clinical Pulmonary Function Test.	2-8-2	4	150	180	PA 141-HSE-04 & PA 141-HSH-03
141-HSQ-18	Clinical Critical Care	2-16-4	7 1/3	270	330	PA 141-HSK-05 & PA 141-HSN-06
141-HSR-18	Clinical Anaesthesia	2-16-4	7 1/3	270	330	PA 141-HSL-05 & PA 141-HSH-03
141-HSS-10	Clinical Neonatal & Pediatric R.C.	2-8-3	4 1/3	150	195	PA 141-HSN-06 & PA 141-HSM-05
141-HST-04	Case Studies & Research	2-2-2	2	60	90	Sixth semester-only if student is eligeable for CE
	English Exit Examination (End of sixth semester)					
Third Year Totals		11-51	26	930	1,170	

Épreuve synthèse de programme

SUMMARY and TOTALS for all THREE YEARS

SEMESTERS/YEARS	CONTACT HOURS	CREDITS	TOTAL TEACHING HRS	TOTAL ACTIVITY HRS
First Semester	20-11	16 2/3	465	750
Second Semester	21-8	16 1/3	435	735
First Year	41-19	33	900	1,485
Third Semester	19-14	17 1/3	495	780
Fourth Semester	15-15	15 1/3	450	690
Second Year	34-29	32 2/3	945	1,470
Fifth & Sixth Semesters	11-51	26	930	1,170
Third Year	11-51	26	930	1,170
Totals	86-99	91 2/3	2,775	4,125
General Education			660	1,200
Education for the profession			2,115	2,925
Clinical (Year-1 20 hrs, Year-2 96 hrs, Year-3 1,024 hrs)			1,140	

Program Pedagogical Flow Chart

(A Learning & Assessment Guide)

The following courses are presented in a pedagogic developmental sequence per semester. The primary pedagogical objective of each course is based on either, **KNOWLEDGE** acquisition, **APPLICATION** of prior and new knowledge associated with tasks, or **PERFORMANCE** of tasks. Knowledge acquisition implies cognitive learning, and in some courses affective (A) learning as well, while application and performance objectives includes the development and mastering of psychomotor skills.

KNOWLEDGE: **Cognitive** and (in some courses **Affective**), necessary for effective and safe performance of tasks.

APPLICATION: **Cognitive**, Affective and **Psychomotor** skills developed via simulation of tasks.

PERFORMANCE: Application of **(Cognitive-Affective-Psychomotor)** tasks in a professional work environment.

First Semester

General Education

English (A): Preparatory or Introductory	KNOWLEDGE - GENERAL COMMUNICATION
Humanities: World Views	KNOWLEDGE (A) - GENERAL COMMUNICATION
Complementary	KNOWLEDGE - PERSONAL WELFARE

Education for the Profession

Anatomy & Physiology - I	KNOWLEDGE - ROOT SCIENCES
Introduction to the Profession	KNOWLEDGE & APPLICATION - PROF. TASKS
Basic Instrumentation	KNOWLEDGE & APPLICATION - ROOT SCIENCES
Health Science Chemistry	KNOWLEDGE - ROOT SCIENCES

Second Semester

General Education

English(A): Literary Genres	KNOWLEDGE - GENERAL COMMUNICATION
French (A): General Communication	KNOWLEDGE - GENERAL COMMUNICATION
Physical Education	PERFORMANCE - PERSONAL HEALTH
Complementary	KNOWLEDGE - PERSONAL WELFARE

Education for the Profession

Anatomy & Physiology - II	KNOWLEDGE - ROOT SCIENCES
Respiratory Care	APPLICATION - PROFESSIONAL TASKS
Blood Gases & Hemodynamics	APPLICATION - FRONT LINE SCIENCES
Psychology in Health Care	KNOWLEDGE (A) - COMMUNICATION & BEHAVIOR

Third Semester

General Education

English (B): Communicating Care and Compassion.	KNOWLEDGE (A) -PROFESSION COMMUNICATION
Humanities: Knowledge.	KNOWLEDGE - GENERAL COMMUNICATION
French (B): *Le français des soins de la santé.*	KNOWLEDGE (A) -PROFESSION COMMUNICATION

Education for the Profession

Pulmonary Function Testing & Diagnostics.	APPLICATION - PROFESSIONAL TASKS
Cardiovascular Diagnosis & Monitoring	APPLICATION - PROFESSIONAL TASKS
Mechanical Ventilators.	APPLICATION - FRONT LINE SCIENCES
Diseases & Disorders	KNOWLEDGE - FRONT LINE SCIENCES
Clinical Respiratory Care-I	KNOWLEDGE & PERFORMANCE -PROF.TASKS

Fourth Semester

General Education

English (A): Literary Themes.	KNOWLEDGE - GENERAL COMMUNICATION
Humanities (B): Ethical Issues Related to Health & Science.	KNOWLEDGE (A) -PROFESSION COMMUNICATION
Physical Education	PERFORMANCE - PERSONAL HEALTH

Education for the Profession

Artificial Pulmonary Ventilation.	APPLICATION - PROFESSIONAL TASKS
Anaesthesia Technology.	APPLICATION - PROFESSIONAL TASKS
Neonatal & Pediatric Respiratory Care.	APPLICATION - PROFESSIONAL TAKS
Clinical Respiratory Care-II	KNOWLEDGE & PERFORMANCE -PROF.TASKS

Fifth & Sixth Semesters

General Education

Physical Education	PERFORMANCE - PERSONAL HEALTH

Education for the Profession

Clinical Pulmonary Function Testing.	PERFORMANCE - PROFESSIONAL TASKS
Clinical Critical Care.	PERFORMANCE - PROFESSIONAL TASKS
Clinical Anaesthesia.	PERFORMANCE - PROFESSIONAL TASKS
Clinical Neonatal & Pediatric R. C.	PERFORMANCE - PROFESSIONAL TASKS
Case Studies & Research.	KNOWLEDGE & *ÉSP* PREPARATION

***Épreuve synthèse de programme*/Comprehensive Asessment.**

Assessment Activity Based On Problem Solving Of Comprehensive Clinical Situations.

Equivalencies

141 - OLD PROGRAM 141.AO - NEW PROGRAM

To be used in cases involving students registered in the Old Program (before A-97), who have failed a given course(s) and must access a course(s) from the New Program, in order to complete their program of study.

FIRST YEAR - FIRST SEMESTER

101-911-78 Human Biology I	3-2-3	2 2/3	101-HSD-06	R&A Anatomy -I	4-2-3 3
141-101-79 Resp. Care I	2-4-2	2 2/3	141-HSA-04	Introduction to the Pro.	2-2-2 2 1/3
			141-HSB-05	Basic Instrumentation	2-3-2 2 1/3
202-105-75 Gen. & Org. Chem.	3-2-3	2 2/3	202-HSF-05	H & S Chemistry	3-2-2 2 1/3

FIRST YEAR - SECOND SEMESTER

101-921-78 Human Biology II	3-2-3	2 2/3	101-HSE-05	R&A Anatomy -I	5-0-2 2 1/3
101-942-78 Microbiology & I	2-2-2	2	141-HSA-04	Introduction to the Pro.	2-2-2 2 1/3
141-201-79 Resp. Care II	2-2-1	1 2/3	141-HSC-06	Respiratory Care	3-3-3 3
202-304-78 Biochemistry	3-2-3	2 2/3	202-HSF-05	H&S Chemistry	3-2-2 2 1/3
			141-HSD-03	Blood Gases & H.	2-1-2 1 2/3

SECOND YEAR - THIRD SEMESTER

101-970-79 Anatomy & Physio.	4-0-2	2	101-HSE-05	R&A Anatomy - II	5-0-3 2 2/3
141-311-79 CPFT	2-4-2	2 2/3	141-HSE-04	PFT & Diagnostics	2-2-2 2
			141-HSD-03	Blood Gases & H.	2-1-2 1 2/3
141-331-79 CPR	2-2-1	1 2/3	141-HSF-05	CPR & EKG	3-2-2 2 1/3
141-441-79 Pharmacology	3-0-3	2	141-HSC-06	Respiratory Care	3-3-3 3
141-201-79 Resp. Care II	2-2-1	1 2/3	141-HSJ -06	Clinical Resp. Care I	1-5-1 2 1/3

SECOND YEAR - FOURTH SEMESTER

1-401-79 Resp. Care III	3-4-2	3	141-HSG-05	Mech. Ventilators	2-3-2 2 2/3
			141-HSK-05	Artificial Pulm. V.	3-2-3 2 2/3
141-421-79 Anesthesia I	2-2-2	2	141-HSL-05	Anaesthesia Techno.	3-2-3 2 2/3
141-431-79 Pathology	3-0-3	2	141-HSH-03	Diseases & Disorders	3-0-3 2
141-451-79 N&P Resp. Care-I	2-1-1	1 1/3	141-HSM-05	Neonatal & Peads.	2-3-2 2 1/3
141-201-79 Resp. Care II	2-2-1	1 2/3	141-HSN-06	Clinical Resp. Care II	1-5-1 2 1/3

THIRD YEAR - FIFTH & SIXTH SEMESTERS

350-906-77 Psychology	1-2-3	2	350-HSB-03	Psychology HC	3-0-2 1 2/3
141-511-81 CPFT - II	1-7-1	3	141-HSP-10	Clinical PFT	2-8-2 4
141-501-79 Med. Surg. RC	2-10-2	4 2/3	141-HSQ-18	Clinic. Critical Care	2-16-4 7 1/3
141-521-79 Anesthesia II	3-17-2	7 1/3	141-HSR-18	Clinical Anaesthesia	2-16-4 7 1/3
141-601-79 Neonatal & P. -II	1-7-1	3	141-HSS-10	Clinical N.& P.	2-8 3 4 1/3
141-531-79 Comprehensive - I	3-0-3	2	141-HST-04	Case Studies & R.	2-2-2 2
141-631-79 Comprehensive - II	3-0-3	2	141-HST-04	Case Studies & R.	2-2-2 2
141-611-79 Intensive Care	2-14-2	6	141-HSQ-18	Clinic. Critical Care	2-16-4 7 1/3

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Overall Program Outcome

Twenty-Seven Statements of Competence & Respective Course(s)
Five General Education Competencies & Twenty-Two Profession Based Competencies

General Education Statements of Competence & Respective Courses (5)

01 APPLY EFFECTIVE ORAL AND WRITTEN COMMUNICATION SKILLS IN ENGLISH AND FRENCH IN HEALTH CARE. (SC) 3 English Courses & 2 French Courses

02 COMMUNICATE CARE AND COMPASSION. (SC) 1 English Course

03 DISCUSS ETHICAL ISSUES RELATED TO HEALTH AND SCIENCE. (SC)
1 Humanities Course

04 DISCUSS EXISTING AND/OR NEW PERSONAL INTERESTS. (SC)
2 Humanities Courses & 2 Complementary Courses

05 DESCRIBE THE CONCEPT AND THE IMPORTANCE OF PERSONAL PHYSICAL-HEALTH. (SC) 3 Physical Education Courses

Education for the Profession Statements of Competence & Respective courses (22)

01 DEFINE THE DEPTH AND SCOPE OF THE PROFESSION OF RESPIRATORY & ANAESTHESIA TECHNOLOGY. (SC) Course 141-HSA-04 Introduction to the Profession

02 APPLY RULES AND PROCEDURES RELATED TO HEALTH AND SAFETY IN A SIMULATED SITUATION. (SC) Course 141-HSA-04 Introduction to the Profession

03 APPLY FUNCTIONAL CONCEPTS RELATED TO INSTRUMENTATION. (SC)
Course 141-HSB-05 Basic instrumentation

04 APPLY DETAILED KNOWLEDGE OF THE RESPIRATORY, CARDIOVASCULAR AND NERVOUS SYSTEMS. (SC) Course 101-HSD-06 R&A Anatomy & Physiology -I

05 APPLY KNOWLEDGE RELATED TO BASIC HEALTH SCIENCE CHEMISTRY.(SC)
Course 202-HSF-05 Health & Science Chemistry

06 APPLY PULMONARY FUNCTION TESTING AND DIAGNOSTIC PROCEDURES IN A SIMULATED SITUATION. (SC)
Course 141-HSE-04 Pulmonary Function Testing & Diagnostics

07 APPLY BASIC RESPIRATORY CARE PROCEDURES IN A SIMULATED SITUATION. (SC) Course 141-HSC-06 Respiratory Care

08 APPLY KNOWLEDGE AND PRINCIPLES RELATED TO GENERAL ANATOMY AND PHYSIOLOGY. (SC) Course 101-HSE-05 R&A Anatomy & Physiology -II

09 ASSESS CLIENT-PATIENT BLOOD GASES AND THE ADMINISTRATION OF MEDICAL GASES IN A SIMULATED SITUATION. (SC) Course 141-HSD-03 Blood Gases

10 APPLY CARDIOPULMONARY RESUSCITATION AND CARDIOVASCULAR MONITORING AND DIAGNOSTIC PROCEDURES IN SIMULATED SITUATIONS. (SC) Course 141-HSF-05 Cardiovascular Diagnostics & Monitoring

11 PREPARE A MECHANICAL VENTILATOR FOR USE ON A CLIENT. (SC) Course 141-HSG-05 Mechanical Ventilators

12 APPLY KNOWLEDGE OF PATHOPHYSIOLOGY IN RELATION TO CARDIO-RESPIRATORY RESPONSE. (SC) Course 141-HSH-03 Diseases & Disorders

13 ESTABLISH A SUPPORTIVE RELATIONSHIP WITH CLIENTS AND MEMBERS OF THE HEALTH CARE TEAM. (SC) Course 350-HSB-03 Psychology in Health Care

14 PERFORM BASIC RESPIRATORY CARE PROCEDURES ON CLIENT-PATIENS IN A VARIETY OF SITUATIONS. (SC) Course 141-HSJ-06 Clinical Respiratory Care -I & Course 141-HSN-06 Clinical Respiratory Care -II

15 MATCH THE VENTILATORY SUPPORT TO THE ADULT CLIENT NEEDS IN A SIMULATED SITUATIONS. (SC) Course 141-HSK-05 Artificial Pulmonary Ventilation

16 PERFORM TECHNICAL ASSISTANCE DURING ANAESTHESIA IN A SIMULATED ENVIRONMENT. (SC) Course 141-HSL-05 Anaesthesia Technology

17 APPLY KNOWLEDGE OF PATHOPHYSIOLOGY AND TECHNICAL PROCEDURES IN RELATION TO THE NEEDS OF THE NEONATAL AND PEDIATRIC POPULATION. (SC) Course 141-HSM-05 Neonatal & Pediatric Respiratory Care

18 PERFORM PULMONARY FUNCTION TESTS ON CLIENTS. (SC) Course 141-HSP-10 Clinical Pulmonary Function Testing

19 PERFORM RESPIRATORY CARE PROCEDURES ON CLIENTS IN A CRITICAL CARE UNIT. (SC) Course 141-HSQ-18 Clinical Critical Care

20 ASSUME TECHNICAL ASSISTANCE IN ANAESTHESIA, IN A CLINICAL SETTING. (SC) Course 141-HSR-18 Clinical Anaesthesia

21 PERFORM NEONATAL AND PEDIATRIC RESPIRATORY CARE IN A CLINICAL SETTING. (SC) Course 141-HSS-10 Clinical Neonatal & Pediatric Respiratory Care

22 ASSESS THERAPEUTIC AND SUPPORT PROCEDURES ASSOCIATED WITH THE PROFESSION. (SC) Course 141-HST-04 Case Studies & Research

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COURSE FRAMEWORK DEVELOPMENT

A suggested approach

The purpose of a course framework is to expand a macro learning-activity into a set of guidelines which will be used by teachers to develop a course outline (syllabus or *plan d'étude*). The framework must integrate elements from the Exit Profile (also referred to as an Outcome Profile), as well as educational objectives adopted by the college, e.g.; national objectives. Other than elements from the profile, it may be desirable to consider adopting tasks linked to budding new (not yet established) markets. Thus, the course framework becomes the reference guide for the corresponding course outline, and notably, is prescriptive. In a global manner, it represents the expected outcome, as stated in the statement of competence. The framework development process involves the following steps: (1) Developing each Element of the Competence into a series of Performance Criteria; (2) Formulating a course description; (3) Formulating an achievement context; (4) Listing the related Provincial Exit-Profile competencies; and (5) Assigning a course number, a ponderation, course pre-requisite(s), and the number of credits.

ELEMENTS

The verb used to identify each element of the competence (or objective) is critical in that it specifies the ability to be developed, as well as the related learning-activity. The nouns and adjectives specify the type and area of application. Other words in the phrase allow us to establish a relationship with other elements. The order of elements must describe a logical process, especially when dealing with a performance based competence. Regardless of the fact that the elements must be developed prior to the elaboration of the framework and already accompany the macro learning-activities, they should be reviewed at this stage and modified if necessary. You may find some of the following questions useful:

- What is the nature of the outcome (competence)?
- What are the necessary skills, attitudes and behaviours?
- What knowledge is essential to the development of the competence?
- What is the level of complexity?
- What is the relative importance of each element?
- Do the elements suggest a specific order of learning and teaching?

Section B Page XXXIII

PERFORMANCE CRITERIA

Each performance criterion (standard) must reflect a final outcome: What the student is capable of doing. Note, that the related element of the competence becomes a global statement for the sum of its performance criteria. You may find some of the following questions useful:

- What will the student be able to do at the end of this course?
- How will the student demonstrate the particular competence?
- What will be observed and measured to assure that the student has attained competence or a particular the level of competence?

COURSE DESCRIPTION

Intended to inform students (pre and post admission) about the nature of the course and its main focus. It should be brief (between 80 and 120 words).

ACHIEVEMENT CONTEXT

Should describe the conditions under which the student is asked to demonstrate the achievement of the competence. It should be limited to what is absolutely essential for the demonstration of competence.

COURSE NUMBER

The first 3 digits refer to the program number (141). The 3 middle letters denote the college (the first 2 letters) and the alphabetical order of the course (the last letter) per its sequential application in the program grid. Note, that the letter "O" and "I" cannot be used, due to their similarity with numbers. The last 2 digits refer to the total student classroom time per week, regrouping both theory and lab time, and possibly stage time (05). The minimum total value is set at 3 hours per week per course, by the Ministry. Thus, the second 141 course (per the program grid on page XXV) reads, 141-HSB-05. However, it must be noted that the Ministry is at present reviewing its relatively recent decision to use letters as a means of identifying a course.

PONDERATION

The ponderation includes 3 separate numbers in the following order from left to right: the hours of theory, the hours of laboratory (or stage), and the recommended hours of study time. Each is based on a weekly schedule. Using the example provided under course number, the ponderation is as follows: 2 (theory) - 3 (labs) - 2 (study time).

CREDITS

A credit is a unit equivalent to 45 hours of learning activities. It is calculated by adding the numbers of the course ponderation and multiplying the sum by 15 (weeks), then dividing it by 45 (hours). In a given semester–a period of approximately four months or 82 class days–a student will normally acquire 15 credits. A three years or six semesters program requires approximately 90 credits. Using the example provided under course number, the value for course 141-HSA-05 would be 7 hours x 15 weeks = 105 hours divided by 45 hours = 2.33 credits.

Course Pre-Requisite(s)

Courses listed in the program's first semester normally demand pre-requisites prior to acceptance into the program. Courses listed in each of the following semester are likely to require one or more pre-requisite course, meaning that a student must have successfully completed these before taking a given course. Selection of pre-requisites (by the program faculty) requires carefull analysis of the content to assure that each pre-requisite is absolutely essential–implying that a student without the pre-requisite(s) normally would not be able to succeed in a given course. It should be noted, that unnecessary pre-requisites are likely to create obstacles for students out-of-phase.

Provincial Exit-Profile Competencies

The provincial profile competencies must be identified not only in the program documents, including the course framework and course outline, but as well, they eventually have to be transmitted to the Ministry of Education by the college Registrar. These competencies will be listed on the graduating student's final transcript in order to authenticate professional competence.

Once the course frameworks have been developed and ratified by the college, each course framework becomes part of the new (or modified) program grid–which must also be approved by the college. Following the adoption of the grid, teachers can proceed to develop a course outline for each course framework. In addition, a listing of equivalencies between the old program courses and the new program courses will be necessary when dealing with students who will have taken courses in both programs (see sample on page XXXII) ■

Course Framework - Intended for Teachers
Course Outline - Intended for Students

BEST COPY AVAILABLE

Sample

COURSE FRAMEWORK

Course Title : Basic Instrumentation

Course Number: 141-HSB-05

Pondération : 2-3-2 **Credit(s) :** 2.33

Course Prerequisite(s): Student must be registered in the 141.AO program.

Related Provincial Competency

002C Use Equipment Necessary to the Implementation of Respiratory Care Procedures.

Course Description

This course is designed to provide the student with a strong technological base required in the administration of medical gases, aerosol and humidity. This course will focus on key physical principles specific to equipment used in Respiratory Care and Anaesthesia. The students will build their knowledge on an understanding of concepts as they apply to gas laws, physical properties of gases, pressure regulating and flowmetering devices, gas analysers, aerosol and humidity generators and client-patient monitors. Students will also be introduced to pulmonary ventilation and ventilators. Throughout the course safe and proper use of all related equipment will be emphasized.

Achievement Context

Through the use of texts, teaching notes, audiovisual presentations & software and medical instruments and gases. The student's performance will be assessed via written examinations, including formative and summative spot tests and hands-on examinations. Effective and safe application will be emphasized.

Statement of Competence

Apply functional concepts related to instrumentation.

Elements of the Competence

E1. APPLY THE GAS LAWS.

Performance Criteria

P1.1 Convert volume, pressure, temperature and flow measurement using the S.I. and British system, in association with other performance criteria.

P1.2 Differentiate between STPD,BTPS, ATPS and ATPD.

P1.3 Relate the gas laws to medical applications.

ect . . .

Note, that this section was abbreviated. There are actual 9 elements of the competence (for this course), each with its own set of performance criteria.

Course Outline :
A Suggested Format

Following approval by the College of the new program curriculum, the course outlines (syllabus or *plan d'étude*) need to be developed by the respective faculties. This task involves primarily the formulation of the **micro-learning-activities** under each performance criteria. Looking back at the earlier developmental stages, first, the **macro-learning-activities** were formulated along with a set of **elements** for each statement of competence. Next, the course frameworks were drawn-up, including a set of **performance criteria** for each elements of the competence. Then a set of micro learning-activities leading to each performance criterium must be formulated. These are specific and very focussed activities which together form a performance framework. The language used, especially the verb, must be carefully chosen to convey the type and nature of the performance expected from the student. Note, that the micro learning-activities also serve as assessment guides: They will be used by the teacher to develop the evaluation mechanisms. As a helpful guide in formulating performance expectations and learning activities (objectives), Norman E. Gronlund's text "How to Write and Use Instructional Objectives", is highly recommended. It must also be noted, that in similar fashion to prior developmental steps, approval of each learning activity is required before application[1].

In addition to the micro-learning-activities, the college policy concerning course outlines, states that specific information must be included. This includes information about how the student will be assessed and the breakdown of marks, the mediagraphy, the rules and

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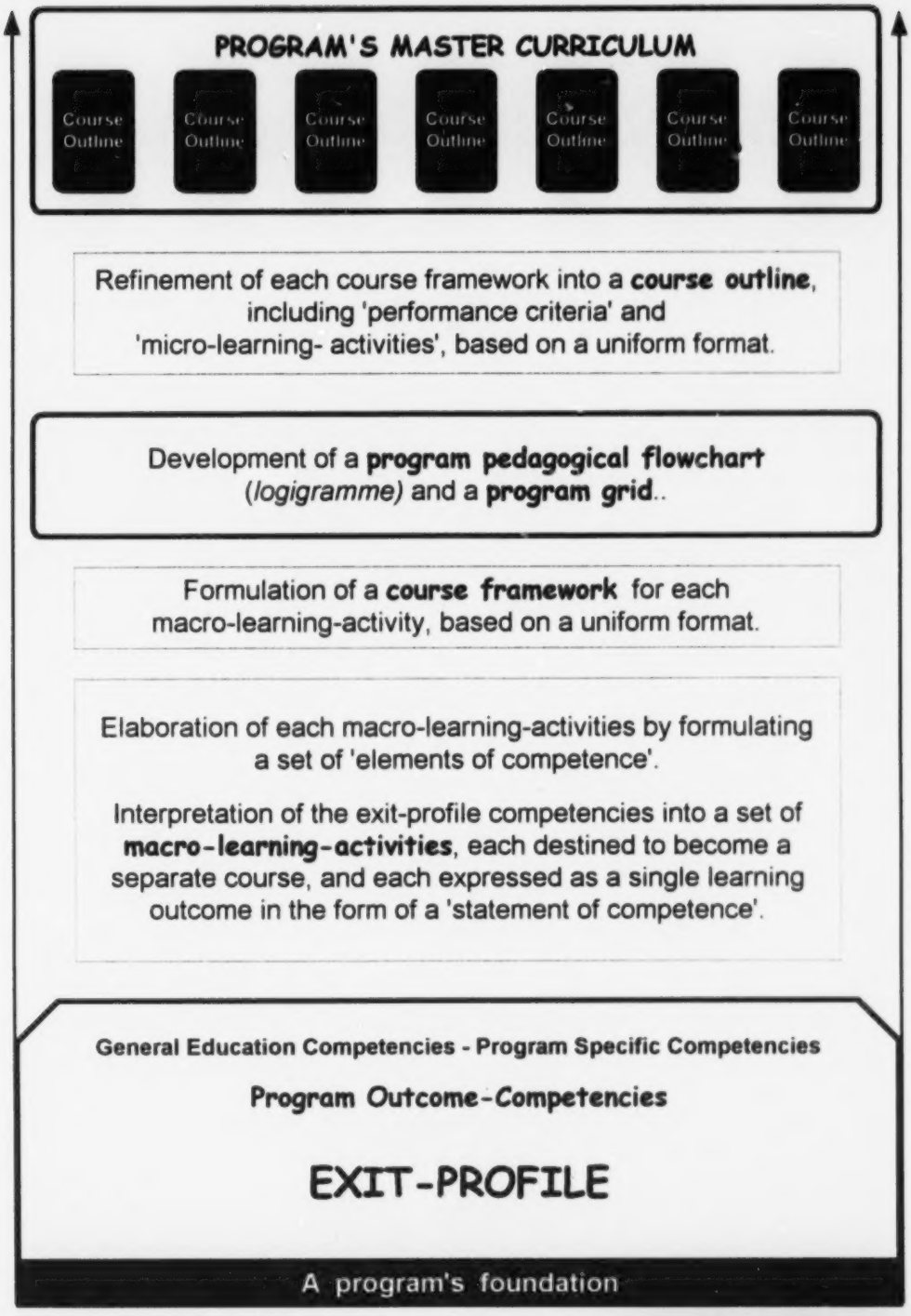
[1] **Macro-Learning-Activities** and the **Elements of the Competence** require consultation by the program's Advisory Board, followed by ratification by the department faculty (or program committee), prior to application, including any modification.
Performance Criteria require approval by the department faculty (or program committee) prior to application, including any modification.
Micro-learning-Activities require approval by a least 3 faculty members (including the program coordinator) prior to application, including any modification.

procedures, information about the teacher including availability outside classroom activities etc . . . It may be advisable for the department to adopt a standard format for all departmental course outlines (*see sample of a course outline provided in ANNEXE. A*).

Finally, once the course outlines have been developed, it would be useful to regroup the content (only) of each course into a single document, referred to as the Master Curriculum: Consequently regrouping all program competencies, elements of competence, performance expectations and micro-learning activities. Henceforth, instead of having to search for information in separate course outlines, one only needs to consult a single document. A copy of the Master Curriculum for the Vanier College Respiratory & Anaesthesia Technology Program, is available for consultation (on site only) in the office of the Dean of Applied Technologies or via the author ■

Overview


PROGRAM'S MASTER CURRICULUM
Course Outline
Course Outline
Course Outline
Course Outline
Course Outline
Course Outline
Course Outline
Refinement of each course framework into a course outline, including 'performance criteria' and 'micro-learning- activities', based on a uniform format.
Development of a program pedagogical flowchart (logigramme) and a program grid..
Formulation of a course framework for each macro-learning-activity, based on a uniform format.
Elaboration of each macro-learning-activities by formulating a set of 'elements of competence'.
Interpretation of the exit-profile competencies into a set of macro-learning-activities, each destined to become a separate course, and each expressed as a single learning outcome in the form of a 'statement of competence'.
General Education Competencies - Program Specific Competencies
Program Outcome-Competencies
EXIT-PROFILE
A program's foundation

CÉGEP
VANIER COLLEGE

Respiratory & Anaesthesia Technology Program

COURSE OUTLINE

Basic Instrumentation

Number: 141-HSB-05 **Ponderation: 2-3-3** **Credit(s): 2.33**

PREREQUISITES: Students must be registered in the 141.A0 program.

DESCRIPTION
This course is designed to provide the student with a strong technological base required in the administration of medical gases, aerosol and humidity. This course will focus on key physical principles specific to equipment used in Respiratory Care and Anaesthesia. The students will build their knowledge on an understanding of concepts as they apply to gas laws, physical properties of gases, pressure regulating and flowmetering devices, gas analysers, aerosol and humidity generators and client-patient monitors. Students will also be introduced to pulminary ventilation and ventilators. Throughout the course safe and proper use of all related equipment will be emphasized.

STATEMENT OF COMPETENCE
Apply functional concepts related to instrumentation.

PROVINCIAL COMPETENCY
002C Use equipment necessary to the Implementation of Respiratory Care Products

Fall 2000

TABLE OF CONTENT

Teachers 2

Course Schedule 2

Teaching Methodologies 2

Assessment of Student Performance 2

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Prerequisite Status to Other 141 Courses 3

Mediagraphy 3

Course Content/Schedule/Required Readings:

E1	Apply the gas laws	4
E2	Demonstrate use of medical gas supply-systems	4 & 5
E3	Regulate the pressure and flow of medical gases	5 & 6
E4	Measure the volume and flow of gases	7
E5	Analyse the concentration of medical gases	8 & 9
E6	Control the temperature of medical gases	9 & 10
E7	Differentiate between types of humidity and aerosol generators	10 & 11
E8	Understand the principles related to . . . sound	11
E9	Explain the basic principles related to . . . light	11 & 12

Tentative Course Schedule ..... **to be annexed**

COURSE TEACHER & AVAILABILITY

Louis P. BELLE-ISLE (Office D-526, Tel. 744-7697) will teach theory and lab classes, compose and evaluate all assignments, formative evaluations and summative evaluations. Availability of teacher to individual students (outside of class time) must be arranged by requesting an appointment. Note, that teachers have other responsibilities including clinical supervision in hospitals and may not be available on certain days. Assignments and evaluations will be corrected and returned within ten school days after completion. All personal work will be returned to each student.

TEACHING SCHEDULE

Theory 2 hours Mondays - Groups A & B - (08:00 to 10:00)
Labs 3 hours Mondays - Group A - (14:00 to 17:00)
Tuesdays - Group B - (10:00-13:00)

TEACHING METHODOLOGIES

Theory: Primarily lectures accompanied by 35 mm slides, videotapes, computer based presentations and hands-on demonstrations. Active student participation in the form of questions and answers, and the sharing of related personal experiences will be encouraged. Occasionally, team discussions and workshops will also be scheduled.

Labs: Hands-on student participation will be the rule. Simulation of clinical situations will occur as applicable, while problem solving will will be the dominate format.

ASSESSMENT OF STUDENT PERFORMANCE

The main objective of this course is the acquisition knowledge linked to clinical applications. Mastery of course objectives is essential for effective and safe (competent) performance of tasks in all program courses. **Assessment of student performance will involve the ability to remember facts and figures, understand principles and concepts, think for "one-self", "problem-solve" and performance of specific tasks in a simulated environment.** Various types of question (multiple choice, true or false, short and long essays, calculations, clinical simulations and live demonstration observation-assessment) will be used . A **60%+ as a final mark is required** for a student to pass the course and meet th competency requirements of this course. Note, that **bonus marks** will be available during written tests.

EVALUATION BREAKDOWN

September 25	First Semester Test - 1 hour	Items E1, E2 & E3.....	No marks (Formative assessment)
October 16	Second Semester Test - 2 hours	Items E1 to E5.....	20 % (Mid-Term)
November 27&28	Clinical Simulation Test 15 min.	Items E2 through E7.....	15 %
December 8	Final Semester Test - 4 hours	All items	50 % (Date to be confirmed)
Spot Tests	Short unannounced spot tests given during either theory or lab classes and based mostly on required readings from course texts. Student will be graded individually on best 3 out of 6 spot test		15 %
Final Mark			100 %

Note, *"The College policies on academic complaints (see 7210-8), cheating and plagiarism (see 7220-10), and religious holiday absences (see 7210-20) will be followed."*

PROGRAM RULES & REGULATIONS

All rules and regulations contained in the **STUDENT ENTRANCE GUIDE** (signed for) are applicable to this course and all other 141 courses. Should you lose a portion or all of its pages, it is your responsibility to request a replacement copy. If you have any question regarding the meaning and wording of any of those rules and regulations, please ask your teacher for assistance.

ATTENDANCE REQUIREMENTS

Students must attend 85 % of all theory classes and 85 % of all lab classes. If a student fails to meet one or both attendance requirements, he/she will automatically fail this course regardless of academic performance, and the student will have to repeat the entire course. Per college-wide policy, the only absence which may be excused are those for religious reasons (only those officially recognized by the College).

PREREQUISITE STATUS FOR OTHER PROGRAM COURSES

Following a successful completion of this course **(141-HSB-05)**-and only then-a student will be permitted to attend courses **(141-HSC-06, 141-HSE-04, 141-HSF-05 & 141-HSG-05)**, and challenge the *Épreuve synthèse de programme* (Comprehensive Program Assessment) at the end of the program.

MEDIAGRAPHY

Required Texts

Scanlan, C. L., Spearman, C. B. & Sheldon, R. L. (1999, 7th Ed.). **Egan's Fundamentals of Respiratory Care**. St. Louis: Mosby. (Approximate cost $100.00)

Branson, R. D., Hess, D. R. & Chatburn, R. L. (1999, 2nd Ed.). **Respiratory Care Equipment**. Philadelphia: Lippincott. (Approximate cost $80.00)

Sibberson, R. (1996). **Practical Math for Respiratory Care**. St. Louis: Mosby. (Approximate cost $40.00)

(Note, that required texts will be used extensively in this course and again in many other program courses.)

Recommended accessories

Stethoscope - Adult model with a dual-accumulator. (Suggest model "Littman-3M",approximate cost $85.00)

Medical Dictionary - Suggest "Mosby's Medical, Nursing and Allied Health Dictionary" which is available in the College bookstore. (approximate cost $60.00)

Bibliography

Burton, G. G. (1991, 2nd ed.). Respiratory Care-A Guide to Clinical Practice. Philadelphia: J. B. Lippincott.

Chang, R. (1994). Respiratory Care Calculations. Albany, N.Y.: Delmar.

Dorsh, J. A. & Dorsh, S.E. (1994, 3rd Ed.). Understanding Anesthesia Equipment: Construction, Care and Complications. Baltimore: Williams & Wilkins.

Eubanks, D. H. & Bone, R. (1990, 2nd ed.). Comprehensive Respiratory Care-A Learning System. St. Louis: Mosby.

MacIntosh, Mushin & Epstein (1987, 4th ed.). Physics for the Anaesthetist. Great Britain: Blackwell Scientific.

McPherson, S. (1995, 5th ed.). Respiratory Care Equipment. St. Louis: Mosby-Year Book.

Nave, C. R. & Nave, B. C. (1985, 3rd ed.). Physics for the Health Sciences. Philadelphia: W. B. Saunders.

Osis, M. (1991, 2nd ed.). Dosage Calculations in SI Units. U.S.A.: Mosby-Year Book.

Pilbeam, S. P. (1990, 2nd ed.). Mechanical Ventilation: Physiological & Clinical Applications. St. Louis: Times-Mirror.

Sibberson, R. (1996). Pratical Math for Respiratory Care. St. Louis: Mosby-Year Book.

Note, that mutilation of Library material has serious consequences for other students wishing to use the same material. As well, a student responsible for mutilation will be required to refund the replacement cost, and possibly suffer other consequences.

"KEY TO COURSE OUTLINE FORMAT"

E= ELEMENTS OF THE COMPETENCE/OBJECTIVES.

(Required/Suggested Readings may be listed below each element.)

P= Performance criteria/standards.

L=Learning activities & evaluation criteria.*

Performance of a task shall always imply that it must be done EFFECTIVELY AND SAFELY.

E1. APPLY THE GAS LAWS.

Scanlan (89, 97-99, 1141-1143)
Branson (2-10)
Sibberson (1 to 33)

P1.1 Convert volume, pressure, temperature and flow measurements using the S.I. and British system, in association with other performance criteria.

- L1.1.1 Define terms associated with volume, pressure, temperature and flow.
- L1.1.2 Differentiate between the British and the International systems in terms of volume, pressure, temperature and flow measurement scales and values.
- L1.1.3 Convert volume, pressure, temperature and flow measurements between the S.I. and the British system.

P1.2 Differentiate between STPD, BTPS, ATPS and ATPD.

- L1.2.1 Define STPD, BTPS, ATPS and ATPD.
- L1.2.2 Convert a volume measurement between the BTPS and STPD and vis-a-versa.

P1.3 Relate the gas laws to medical applications.

- L1.3.1 Define terms associated with each gas law.
- L1.3.2 Explain each of the following gas laws: Boyle's, Charles', Combined gas, Dalton's, Gay Lussac's, (Graham's, Henry's and Poisseuille's without calculations).
- L1.2.3 Apply the formula for each of the gas laws.

E2. DEMONSTRATE USE OF MEDICAL GAS SUPPLY-SYSTEMS.

Scanlan (715-727)
Branson (22-35, 42-53, 734)
Sibberson (34 to 46)

curiosity

P2.1 Describe the basic function of an air compressor, a turbine, an oxygen concentrator and a cryogenic delivery system.

L2.1.1 Explain "pneumatic energy".
L2.1.2 Describe their purpose and application.
L2.1.3 Describe their internal functional principal.
L2.1.4 Identify the recommended precautions associated with their clinical use.

P2.2 Demonstrate safe and appropriate use of medical gas cylinders.

L2.2.1 Describe the basic physiological applications a each medical gas.
L2.2.2 Identify medical gas cylinders and related information in relation to size, colour code, decal, safety code and engraved markings.
L2.2.3 Explain the function of cylinder valves.
L2.2.4 Differentiate between the A.S.S.S. and the P.I.S.S.
L2.2.5 Calculate the duration of "E & H" size medical gas cylinders in relation to a set flowrate–allowing for leftover of 500 psi.
L2.2.6 Describe safety procedures and precautions associated with the use, transport and storage of medical gas cylinders.
L2.2.7 Demonstrate safe handling practices of compressed gas cylinders.
L2.2.8 Explain the significance of "critical temperature" in relation to gases.

P2.3 Describe the basic structure and function of a medical gas piping system.

L2.3.1 Describe the basic structure of a medical gas manifold system.
L2.3.2 Describe the basic structure of a medical gas piping system.
L2.3.3 Identify the four different tests required before a medical gas piping system is certified for clinical use.
L2.3.4 Explain the purpose and function of shut-off valves within a medical gas piping system.

Warning: *The written word is often seen as an absolute truth, impossible to contradict. The very availability of a textbook has a tendency to encourage the empirical use of its content. You are encouraged to always exercise caution, for future investigation may expand, modify or contradict* a principle or statement. *Do not believe everything you read, question even the most insignificant data. You have been warned* !!!

E3. REGULATE THE PRESSURE AND FLOW OF MEDICAL GASES.

Scanlan (93-95, 99-104, 727-735)
Brason (10-15, 35-41, 56-63,.69-72, 304-309, 328-329)

P3.1 Measure atmospheric pressure with a mercury barometer.

L3.1.1 Measure atmospheric pressure with a mercury barometer and apply necessary correction(s).
L3.1.2 Convert unit values between; psi, mmHg, kPa and cmH_2O.

P3.2 Differentiate between types of pressure manometers.

L3.2.1 Describe the purposes of elastic deformation manometers.
L3.2.2 Differentiate between high pressure manometers (>15 PSI) and low pressure manometers (<15 PSI).

P3.3 Describe the function of common pressure transducers.

L3.3.1 Explain the basic function of common pressure-transducers.
L3.3.2 Differentiate between common pressure-transducers.

P3.4 Demonstrate the safe and appropriate use of a reducing valve and a regulator.

L3.4.1 Describe the purpose of a reducing valve.
L3.4.2 Identify the external components of a reducing valve.
L3.4.3 Differentiate between a reducing valve and a regulator.
L3.4.4 Differentiate between a "preset reducing valve" and an "adjustable reducing valve".
L3.4.5 Match the correct reducing valve or regulator with the appropriate gas and cylinder.
L3.4.6 Describe the method by which to test reducing valves and regulators for a possible leak.
L3.4.7 State the consequence(s) of setting the wrong working pressure when using an adjustable reducing valve.
L3.4.8 Demonstrate safe handling practices for reducing valves and regulators.

P3.5 Differentiate between various types of flow and pressure controlling valves.

L3.5.1 State the basic purpose for each type of valve (one-way, multi-directional, pressure relief and demand valves).
L3.5.2 Using a functional example, describe the operating principle for each type of valve.
L3.5.3 Identify disadvantages and concerns associated with valves and particular designs.

P3.6 Explain the principles related to fluid entrainment, mixing and gas concentration.

L3.6.1 Define terms related to conceptual fluid entrainment, mixing and gas concentration.
L3.6.2 Describe the factors which affect gas flow resistance and their individual relationship.
L3.6.3 Explain and relate each of the following within a dynamic system: pressure gradient, driving pressure, forward pressure, lateral pressure and back pressure.
L3.6.4 Explain the Bernoulli effect.
L3.6.5 Explain the Venturi principle.
L3.6.6 Describe the jet mixing principle.
L3.6.7 Explain the principle of fluid entrainment as related to gas concentration and nebulization.
L3.6.8 Identify factors which affect entrainment, mixing and concentration of fluids, and the related consequences.

P3.7 Demonstrate the appropriate use of various types of flowmetering devices.

L3.7.1 Define the purpose of a flowmeter.
L3.7.2 Explain the function of a Thorpe tube flowmeter.
L3.7.3 Explain the function of a "Bourdon tube" when used as a flowmeter.
L3.7.4 Describe the correct manner by which to read the registered flowrate.
L3.7.5 Describe how to verify the accuracy of a flowmeter.
L3.7.6 Identify the factor(s) which affect the accuracy and/or function of thorpe-tube and bourdon flowmetering devices and state the expected consequences.
L3.7.7 Differentiate between a back-pressure compensated and a non back-pressure compensated flowmeter.
L3.7.8 State the expected result when a flowmeter is set above its maximum value (flush/flood).
L3.7.9 Explain flow corrections for low density gas mixtures (helium).
L3.7.10 Explain the basic function of a "Pulsatile flowmeter/Oxygen saver".
L3.7.11 Adjust flowmeter setting for changes in barometric pressure.

COMPASSION

E4. MEASURE THE VOLUME AND FLOW OF MEDICAL GASES.

Scanlan (380, 751-758, 871-875)
Branson (269-270, 284-302, 490-494)
Sibberson (47 to 57, 137 to 159, 175)

P4.1 Define terms related to gas volume and flow measurement.

- L4.1.1 Define and explain anatomical and physiological terms.
- L4.1.2 Calculate volumes, flows, times, rates and ratios in relation to pulmonary ventilation.

P4.2 Differentiate between constant, intermittent, high and low flow gas-delivery-systems.

- L4.2.1 Differentiate conceptually and mathematically between an intermittent-flow system and a continuous-flow system.
- L4.2.2 Differentiate conceptually and mathematically between a low-flow system and a high-flow system.
- L4.2.3 Explain the advantage(s) and disadvantage(s) associated with low-flow and high-flow oxygen-delivery-systems.
- L4.2.4 Identify examples of low-flow systems and high-flow systems.

P4.3 Explain the differences between a normal breath and a mechanically delivered breath.

- L4.3.1 Describe normal pulmonary ventilation.
- L4.3.2 Define intrapulmonary, transpulmonary, intrapleural and transairway pressures.
- L4.3.3 Explain (briefly) the general purpose of artificial lung ventilation.
- L4.3.4 Differentiate between a negative pressure and a positive pressure ventilator.
- L4.3.5 Describe the basic functional principles of a positive pressure ventilator: time selection, volume selection, pressure limit, assisted breath, alarm adjustment and monitoring.
- L4.3.6 Differentiate physiologically between normal ventilation and positive pressure ventilation.
- L4.3.7 Explain concisely the change-over between phases of the ventilatory cycle during positive pressure ventilation.
- L4.3.8 Apply basic principles of positive pressure ventilation in a simulated situation.

P4.4 Describe the functional principle of primarily-volume-measuring-devices (PVMS) and primarily-flow-measuring-devices (PFMS).

- L4.4.1 Define mechanical terms associated with volume/flow measuring devices.
- L4.4.2 Describe the basic operational principle for each type volume/flow measuring device.
- L4.4.3 Identify the advantages and disadvantages for each type of volume/flow measuring device.
- L4.4.4 Identify the factor(s) which may affect the accuracy of each type of volume/flow measuring device.
- L4.4.5 Identify one instrument which incorporates a specific type of volume/flow measuring device (for each type).
- L4.4.6 Describe how to verify the accuracy of a volume and/or flow measuring device.
- L4.4.7 Apply correction factor if the volume measured differs from the expected value.

P4.5 Demonstrate the appropriate application of volume and flow measuring devices.

L4.5.1 Differentiate between anatomical and mechanical dead-space.
L4.5.2 Describe the correct procedure for measuring the volume of adaptors and tubes which contribute to mechanical deadspace.
L4.5.3 Describe and demonstrate the correct use and placement of a volume/flow sensor within a patient-ventilator breathing circuit when measuring exhaled values.
L4.5.4 Measure and calculate various volumes in association with basic pulmonary ventilation.

E5. ANALYSE THE CONCENTRATION OF MEDICAL GASES.

Scanlan (338-339, 363-369, 758-759)
Branson (81-85, 217-218, 248-252, 257-265)
Sibberson (58 ato 68, 146 to 148)

P5.1 Calculate the oxygen concentration when mixing air and oxygen at different ratios.

L5.1.1 Differentiate between air:oxygen ratios and the related oxygen concentration.
L5.1.2 Identify the oxygen concentration resulting from equal mixing of air and oxygen.
L5.1.3 Calculate the oxygen concentration based on the mixing of different air and oxygen flowrates.

P5.2 Demonstrate a set-up which would allow the mixing of gases from two separate flowmeters, in a safe and appropriate manner.

L5.2.1 Describe and demonstrate the set-up which would allow the mixing of gases from an oxygen flowmeter and an air flowmeter.
L5.2.2 Calculate the resulting oxygen concentration based on the air:oxygen.

P5.3 Demonstrate the safe and appropriate use of a gas blender.

L5.3.1 State the general purpose of an air-oxygen blender.
L5.3.2 Explain the functional principles of common used gas blenders, including built-in alarms and failure by-pass systems.
L5.3.3 Differentiate between a high-flow blender and a low-flow blender in terms of application(s).
L5.3.4 State the expected accuracy of a blender and explain how it can be verified.
L5.3.5 Identify common causes related to blender failure and inaccuracy and describe their consequences.
L5.3.6 Explain how to verify the function of a pressure sensitive alarm system on a blender.
L5.3.7 Describe and demonstrate safe and appropriate use of a blender.

P5.4 Describe the functional principles of paramagnetic and electrochemical oxygen analysers and of infrared carbon dioxide analyser.

L5.4.1 Define and explain electro-mechanical terms related to gas analysers.
L5.4.2 Explain the general purpose and need for oxygen and carbon dioxide analysers.
L5.4.3 Explain the principles of measurement for paramagnetic and electrochemical oxygen analysers.
L5.4.4 Identify potential problems specific to each type of oxygen analyser and explain the recommended methods for dealing with such problems.

P5.5 Demonstrate the safe and appropriate use of an oxygen analyser.

L5.5.1 Identify the normal value for atmospheric oxygen concentration and partial pressure at sea level–in air and blood.
L5.5.2 Describe and demonstrate how to set the alarms when an oxygen analyser is used as a monitor for oxygen concentration.

L5.5.3 Describe and demonstrate how to perform a two point calibration on an oxygen analyser.

P5.6 Demonstrate the safe and appropriate use of a carbon dioxide analyser.

L5.6.1 Identify the normal values for carbon dioxide pressure and concentration in the atmosphere, in blood, in inhaled and exhaled gases.
L5.6.2 Identify the normal recording speeds/display sweep used in capnography.
L5.6.3 Describe the normal capnographic waveform and the significance of its four segments.
L5.6.4 Describe the basic 'internal' function of an infrared carbon dioxide analyser.
L5.6.5 Identify the recommended sample flowrates for capnography for neonate, pediatric and adult patients.
L5.6.6 Describe and demonstrate how to perform the calibration of a carbon dioxide analyser.
L5.6.7 Describe the special considerations associated with the use of a carbon dioxide analyser during anaesthesia.
L5.6.8 Distinguish a non-diverting from a diverting carbon dioxide (infrared) analyser.
L5.6.9 Describe the basic 'internal' function of a calorimetric carbon dioxide analyser.
L5.6.10 Compare the application of a calorimetric (CO_2) analyser with an infrared (CO_2) analyser.

P5.7 Describe the functional principle of a Mass Spectrometer.

L5.7.1 Explain the basic functional principle of a Mass spectrometer.

P5.8 Discuss principles of monitoring. (*Student project–to be announced)*

L5.8.1 Differentiate precision from accuracy.
L5.8.2 Distinguish between false positive, true positive, false negative and true negative.
L5.8.3 Compare overshoot and undershoot.
L5.8.4 Define 'artifact'.
L5.8.5 Define monitoring.
L5.8.6 Discuss problems and failures associated with monitors.

E6. CONTROL THE TEMPERATURE OF MEDICAL GASES.

Scanlan (82-83, 157, 662-663, 760)
Branson (5-7)

P6.1 Explain the processes of heat transfer.

L6.1.1 Explain how heat is transferred.
L6.1.2 Differentiate between melting, freezing and sublimation.
L6.1.3 Compare the conditions which favour or impede heat transfer: colour, insolation, vacuum, distance and $\Delta T°$.

P6.2 Convert temperature values between the Fahrenheit, Celsius and Kelvin scales. *(self learning)*

L6.2.1 Differentiate between temperature scales.
L6.2.2 Convert temperature values between the Fahrenheit, Celsius and Kelvin scales.

P6.3 Differentiate between the functional principle of various types of temperature sensors.

L6.3.1 Differentiate between heat and temperature.
L6.3.2 Explain the principle of temperature sensing.
L6.3.3 Explain the functional principle of devices used to produce heat in a clinical setting.

P6.4 Relate the water vapour capacity of a gas in relation to the temperature of that gas.

L6.4.1 Define and explain terms related to temperature and humidity.
L6.4.2 Identify the scales and relative values used express the weight, volume and pressure of water vapour within a gas.
L6.4.3 Define 'Isothermal Saturation Boundary' (ISB).
L6.4.4 Identify the physiological needs in relation to humidity and temperature.
L6.4.5 Define "absolute humidity" and "physiologic body humidity".
L6.4.6 Explain and calculate the following: "relative humidity", "humidity deficit" and "physiological humidity deficit".
L6.4.7 Explain how the temperature of a gas affects it ability to hold water vapour.

P6.5 Explain the conceptual function of a servo-controlled heated humidifier.

L6.5.1 Explain the concept of servo-control.
L6.5.2 Identify the appropriate placement of a temperature sensor within a breathing circuit.
L6.5.3 Explain the functional concept of a servo-controlled heated humidifier in relation to a clinical application.
L6.5.4 Justify the recommended temperature range for inhaled gas.

P6.6 Explain the functional principles of an infant "radiant-warmer" and an "infant incubator".

L6.6.1 Explain the concept of a thermoneutral environment.
L6.6.2 Describe the purpose and functional principle of an infant incubator.
L6.6.3 Describe the purpose and functional principle of an infant radiant-warmer.
L6.6.4 Explain the principles of heat transfer as applied to an infant incubators and an infant radiant-warmer.
L6.6.5 Identify methods of heat production and conservation applicable to infant incubators and infant radiant-warmers.

E7. DIFFERENTIATE BETWEEN TYPES OF HUMIDITY AND AEROSOL GENERATORS.

Scanlan (661-715)
Branson (102-156)
Sibberson (80 to 93)

P7.1 Describe the safe and appropriate use of a heat-and-moisture exchanger.

L7.1.1 Explain the conceptual function and purpose of a heat-and-moisture exchanger.
L7.1.2 Differentiate between types of heat-and-moisture exchangers: HME, HMEF, HHME, HHMEF.
L7.1.3 Identify the precautions and disadvantages associated with the clinical use of a heat-and-moisture exchanger.
L7.1.4 Describe the appropriate use of a heat-and-moisture exchanger.
L7.1.5 Describe the function of an "active HHME".

P7.2 Differentiate between types of humidifiers, in terms of function and output.

L7.2.1 Explain the application of an hygrometer.
L7.2.2 Define and explain technical terms related to humidifiers.
L7.2.3 Identify and explain the technical factors known to affect the output of a humidifier.
L7.2.4 Differentiate between types of humidifiers in terms of design, function, output and application: jet,

bubble, blow-by, ultrasonic, vaporizer and impeller.

P7.3 Differentiate between types of aerosol generators, in terms of function and output.

L7.3.1 Define and explain technical terms related to aerosol generators.
L7.3.2 Identify and explain the technical factors known to affect the output (volume and particle size) of an aerosol generator.
L7.3.3 Differentiate between types of small volume aerosol generators in terms of design, function, output and application: gas powered (SVN) and self powered (Dry-DPI & WET-MDI).
L7.3.4 Distinguish between "Inhalation Accessory Devices'(IAD): spacers and holding chambers.
L7.3.5 Discuss the effects of environment temperature on various types of aerosol generators.

E8. UNDERSTAND THE PRINCIPLES RELATED TO THE TRANSMISSION, SENSING AND RECORDING OF SOUND.

Scanlan (310-311)

P8.1 Explain the principles of sound transmission and sensing.

L8.1.1 Define and explain the terms related to sound transmission and sensing.
L8.1.2 Explain the "Doppler Principle."
L8.1.2 Explain the principles of sound transmission and sensing in relation to cardiopulmonary clinical applications.

P8.2 Demonstrate the proper use and care of a stethoscope.

L8.2.1 Explain how sound is transmitted through a stethoscope.
L8.2.2 Describe the use and care of a stethoscope.
L8.2.3 Differentiate between a "bell accumulator" and a "diaphragm accumulator" in relation to clinical applications.
L8.2.4 Describe the application of a pre-cordial stethoscope.
L8.2.5 Describe the function and clinical application of an esophageal stethoscope.

P8.3 Explain the elementary principles of ultrasound.

L8.3.1 Define ultrasound.
L8.3.2 Describe the applications of ultrasound in client-patient assessment and monitoring.
L8.3.3 Describe the therapeutic application of ultrasound.

E9. EXPLAIN THE BASIC PRINCIPLES RELATED TO THE TRANSMISSION AND SENSING OF LIGHT.

Scanlan (360-363)
Branson (252-257)

P9.1 Explain the principles of light transmission and sensing.

L9.1.1 Define and explain terms related to light transmission and sensing.
L9.1.2 Explain how light may be transmitted and sensed.
L9.1.3 Explain the principle of infrared-light sensing and analysis in capnography.
L9.1.4 Explain phototherapy.

P9.2 Describe technical and clinical applications related to the use of light transmission and sensing.

L9.2.1 Describe the function and clinical application of a device incorporating light transmission and sensing.
L9.2.2 Define SpO_2.
L9.2.3 Explain the functional principle of pulse oximetry.
L9.2.4 Relate the accuracy of pulse oximetry to the actual saturation concentration.
L9.2.5 Discuss recognized sources of error which are likely to affect the function of a pulse oximeter.

"I would rather know what sort of person has a disease than what sort of disease a person has."

Hippocrates

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ANNEX - B

MEMORANDUM

of

UNDERSTANDING

Between

The College and Affiliated Clinical Stage Sites

As partners responsible for the education of future Respiratory Therapists, we are faced with the challenge of providing clinical experiences to enhance the real-life learning of students so that they can perform market entry-level competencies adequately.

This document is intended to be a written understanding between the College and its Affiliated Clinical Stage Sites. It outlines the administrative and pedagogical responsibilities and expectations of both parties with respect to the clinical education of students from the program during the clinical exposure in all three years of the program. Therefore, this document will become an addendum to the Provincial Affiliation Contract between the Minister of Health and Social Services (MSSS), the Minister of Higher Education and Science (MESS) and the Minister of Education (ME).

In accordance with the Affiliation Contract, the College will pay to the Affiliated Site an annual sum based on the number of students and days on site, as well as a daily premium for direct supervision of students by staff Respiratory Therapists.

INDIVIDUAL RESPONSIBILITIES FOR AND DURING CLINICAL ROTATIONS

Definition of "STAGE": A supervised learning activity incorporated in an educational program and taking place in a work milieu associated with the profession. Also referred to as a clinical rotation, it must be understood that a stage is not a training period for a specific work milieu, rather, it is a practical learning experience intended to complement a set of theoretical learning activities designed for a particular program outcome-competency .

Affiliated Site Personnel

Medical Director: A hospital based physician delegated to impart medical direction and supervision of a department in which students rotate. The Medical Director is expected to contribute to the education of students.

Site Manager (SM): A hospital employee hired to manage a department(s) in which students rotate and represents the department(s) on the Liaison Committee. This person is expected to interact closely with all personnel to assure optimal training of students, while providing information to institutional staff as related to individual roles, responsibilities, motivation, understanding objectives and assuring collaboration. The Site Manager assures that institutional staff welcomes and facilitates the teachers integration.

Respiratory Therapist (RT): A hospital employed respiratory therapist assigned (by the SM) perform the following:

- Introduces and familiarizes student with site and facilities.
- Plans use of site facilities and resources to benefit the student.
- Progressively delegates full responsibility for a client-patient, while remaining vigilant and available.
- Guides student and provide necessary support.
- Conducts ongoing observation of student and feedback regarding performance.
- Countersigns student observations and reports.
- Remains available to answers questions and provide additional information.
- Collaborates with site personnel and college teacher.
- Participates in student assessment.
- Serves as member of the speciality Sub-Committee.

The RT will receive a supplementary payment (premiums) per student-per day based on the provincial norm.

College Personnel

Program Coordinator (PC): A faculty member of the college based program who is responsible for the administration and the organisation of all clinical rotations: including the selection and use of affiliated sites and facilities, the scheduling of students and teachers and preparation of the annual Affiliation Contract. This person is a full-time employee of the college and is accountable to the Administration of the college. This person serves on the Program's Advisory Board, chairs the Liaison Committee and meets with students and other participants as need arise.

Teacher (T): A college faculty member of the program whose primary role is teaching and evaluation student in a didactic and/or clinical setting. College teacher preparations and training prior to a stage course in a particular milieu is a teacher/department responsibility, as such teachers must become familiar with site facilities and procedures before the start of a rotation. Responsibilities include the following:

- Introduces and familiarizes student with site and facilities.
- Plans use of site facilities and resources to benefit the student.
- Progressively delegates full responsibility for a client-patient, while remaining vigilant and available.
- Guides student and provide necessary support.
- Conducts ongoing observation of student and feedback regarding performance.
- Countersigns student observations and reports.
- Remains available to answers questions and provide additional information.
- Collaborates with site personnel and college teacher.
- Participates in student assessment.
- Serves as member of the speciality Sub-Committee.

A teacher may be asked to participate in the mid-point evaluation and/or final evaluation of a student in any discipline, if requested by either site personnel or student.

Student: An individual registered as a student in the program, who intends to pursue a career as a RT. The student is expected to abide by the rules and regulations as outlined in the "Student Clinical Guide."

Overall View of Stages

Each clinical exposure, over the 3 years, encompasses a specified set of learning activities as outlined below:

The **First year** (First Semester) includes an introductory course to the profession and the program, during which time students visit affiliated clinical sites. These observation visits serve to clarify the job responsibilities, the role of the practitioner and reaffirm the student's choice of program. These visits involve 4 non-consecutive days of 5 hours each (a total of 20 hours - 1 clinical week), between 07:00 & 12:00 on Wednesdays. Each student rotates through a department of Adult Respiratory Therapy (2 days), a department of Anaesthesia (1 day) and a department of Cardiopulmonary Function Testing (1 day). For additional information, *see Appendix - B, Course outline 141-HSA-05 Introduction to the profession and the program*.

The **Second year** (Third & Fourth Semesters) includes two clinical respiratory care courses, during which time students spend a total of 12 non-consecutive days of 8 hours each (a total of 96 hours - 3 clinical weeks), on Fridays. These rotations are designed to provide students with introductory clinical knowledge and hands-on experiences in different areas of specialization: adult respiratory care, asthma clinic, and sleep studies lab. For additional information, *see Appendix - C1 Course outlines 141-HSJ-06 Clinical Respiratory Care I & 141-HSN-06 Clinical Respiratory Care II*.

The **Third year** consists mainly of hospital based clinical courses, one in each of the major specialities. These courses are designed to provide students with clinical knowledge and hands-on experiences equal to market entry expectations–per program outcome profile. Students will spend 4 days per week (32 weeks), 8 hours per day, Mondays through Thursdays in the following areas: Adult Respiratory Care (11 weeks), Anaesthesia (11 weeks, Cardiopulmonary Function Testing (5 weeks), and Neonatal & Pediatric Respiratory Care (5 weeks). For additional information, *see Appendices D, E, F & G Course outlines 141-HSP-10 Clinical Pulmonary Function Testing, 141-HSQ-18 Clinical Critical Care, 141-HSR-18 Clinical Anaesthesia & 141-HSS-10 Clinical Neonatal & Pediatric*.

First Year Observation Visits

Course: 141-HSA-05 Introduction to the profession and the program.

Overall Objective: Clarify for the student the job responsibilities, the role of the practitioner as a clinician and reaffirm the student's choice of program. Students are expected to observe only (no hands-on, regardless of situation). Each student rotates through a department of Adult Respiratory Therapy (2 days), a department of Anaesthesia (1 day) and a department of Cardiopulmonary Function Testing (1 day).

Duration: First Semester (Fall), 4 non-consecutive days of 5 hours, Wednesdays between 07:00 & 12:00.

Affiliated Hospital	Responsibilities
Site Manager	1. Prepares on-site rotation in accordance with overall objectives. 2. Welcomes students. 3. Reviews department organisation and staff responsibilities. 4. Assures that students receive information and exposure as specified in the course outline and assure that they are supervised by a RT at all time. 5. Reports to PC concerns regarding student behaviour.
Respiratory Therapist	1. Direct supervision of student at all times. 2. Discusses clinical responsibilities and conducts a general tour of the site as related to RT job responsibilities. 3. Reports to SM inappropriate student behaviour.
Vanier College	**Responsibilities**
Program Coordinator	1. Assumes overall responsibility for rotations: selection of sites, scheduling of students, dissemination of information, responds to problems and concerns.
Course Teacher	1. Prepares students for initial rotation. 2. Reviews student rotation report. 3. Informs PC of student concerns regarding visit. 4. Submits an overall assessment of the rotation reports to PC at end of semester.
Student	1. Abides by the schedule & rules and regulations per course outline. 2. Respect hospital policies and procedures. 3. Observes RT performing a variety of job functions. 4. Completes and submits observation report to course teacher within one week of visit.

Note, that the student schedule for the semester will be distributed to each site no later than one month prior to the start of the first visit.

Second Year Clinical Rotations

Courses: 141-HSJ-06 Clinical Respiratory Care I.
141-HSN-06 Clinical Respiratory Care II.

Overall Objective: Provide students with introductory clinical knowledge and hands-on experiences in different areas of specialization: adult respiratory care, asthma clinic, and sleep studies lab.

Duration: Third & Fourth Semesters (Fall & Winter), 12 non-consecutive days of 8 hours, on Fridays.

Affiliated Hospital	Responsibilities
Site Manager	1. Prepares on-site rotation in accordance with objectives. 2. Welcomes students. 3. Informs student about rules & regulations particular to site. 4. Assures that students receive training as specified in the course outline and assure that they are supervised by a RT at all time. 5. Reports to PC concerns regarding student behaviour and performance.
Respiratory Therapist	1. Directs supervision of students at all time. 2. Introduces students to client-patient care per site job-responsibilities. 3. Instructs and guide student during initial client-patient care. 4. Closely monitors students and assures safe and proper preparations and application of procedures. 5. Evaluates student performance per logbook (Appendix - C2) 6. Reports to SM inappropriate or dangerous student behaviour or action.
Vanier College	**Responsibilities**
Program Coordinator	1. Assumes overall responsibility for rotations: selection of sites, scheduling of students, dissemination of information, responds to problems and concerns.
Course Teacher	1. Prepares students for initial rotations. 2. Reviews & compiles clinical evaluation per logbook and submits final mark. 3. Informs PC of student concerns regarding rotations. 4. Submits an overall assessment of the rotation reports to PC at end of semester.
Student	1. Abides by the schedule, the rules and regulations as stated in the course outlines and the Student Clinical Guide (Appendix - I). 2. Respects hospital policies and procedures. 3. Participates in a post-rotation site assessment.

Note, that the student schedule for the semester will be distributed to each site no later than one month prior to the start of the first rotation.

Third Year Clinical Rotations
Anaesthesia & Cardiopulmonary Function Testing

Courses: 141-HSP-10 Cardiopulmonary Function Testing. & 141-HSR-18 Clinical Anaesthesia.

Overall Objective: These courses are designed to provide students with clinical knowledge and hands-on experiences equal to market entry expectations–per program outcome profile. Students will rotate in the following areas: Anaesthesia (11 wks) & Cardiopulmonary Function Testing (5 wks).

Duration: Third & Fourth Semesters (Fall & Winter), 4 days per week, Mondays through Thursdays, 8 hours per day.

Affiliated Hospital	Responsibilities
Site Manager	1. Prepares on-site rotation in accordance with objectives. 2. Introduces students to rotations and site. 3. Informs students about rules, regulations & procedures particular to site. 4. Assures that students receive training as specified in the course outline and assure that they are supervised by a RT at all time. 5. Evaluates students per course evaluation grid (see specialty course outline) in consultation with site RTs. 6. Submits final evaluation to PC. 7. Reports to PC concerns regarding student behaviour and performance. 8. Represents site on speciality Sub-Committee: Participate in developing speciality course outline and evaluation grid.
Respiratory Therapist	1. Assures supervision of students at all time: 4 days per week. 2. Introduces student to client-patient care per site job-responsibilities. 3. Instructs and guides students during initial client-patient care. 4. Monitors student and assures safe and appropriate preparations and application of procedures. 5. Evaluates student performance per evaluation grid contained in course outline provided by the college. 6. Reports to SM inappropriate or dangerous student behaviour or action.
Vanier College	**Responsibilities**
Program Coordinator	1. Assumes overall responsibility for rotations: selection of sites, scheduling of students, dissemination of information, responds to problems and concerns. 2. Conducts assessment of courses & sites by students.
Student	1. Abides by the schedule, the rules and regulations per course outlines and the Student Clinical Guide (Appendix - I). 2. Respects hospital policies and procedures. 3. Documents activities and observations in logbook (Appendix - H) 4. Participates in course and site assessment.

Note, that the student schedule for the semester will be distributed to each site no later than one month prior to the start of the first rotation.

Third Year Clinical Rotations
Adult, Neonatal & Pediatric Respiratory Care

Courses: 141-HSQ-18 Clinical Critical Care.
141-HSS-10 Clinical Neonatal & Pediatric RC.

Overall Objective: These courses are designed to provide students with clinical knowledge and hands-on experiences equal to market entry expectations–per program outcome profile. Students will rotate in the following areas: Adult Respiratory Care (11 wks) & Neonatal & Pediatric Respiratory Care (5 wks).

Duration: Third & Fourth Semesters (Fall & Winter), 4 days per week, Mondays through Thursdays, 8 hours per day.

Affiliated Hospital	Responsibilities
Site Manager	1. Prepares site for rotation in accordance with objectives. 2. Assures that students receive training as specified in the course outline and assures that they are supervised by a RT at all time, when college teacher is not present. 3. Reports to PC concerns regarding student behaviour and performance. 4. Represents site on specialty Sub-Committee: Participate in developing speciality course outline and evaluation grid.
RT - Clinician	1. Supervises student (when teacher is not present - 3 days per week in Adult RC, 1 day per week in Neo-Pediatric RC.) 2. Monitors student and assure safe and appropriate preparations and application of procedures, in the absence of the college teacher. 3. Evaluates student performance per evaluation grid contained in course outline provided by the college, in the absence of the college teacher. 4. Reports to SM and/or college teacher inappropriate or dangerous student behaviour or action.

Vanier College	Responsibilities
Program Coordinator	1. Assumes overall responsibility for rotations: selection of sites, scheduling of students, disseminate information, respond to problems and concerns.
	2. Conducts assessment of courses & sites by students.
Course Teacher	1. Conducts on site visit one day per week-per student (Adult RC).*
	2. Conducts on site visit three days per week (Neo-Pediatric RC).
	3. Introduces student to rotation and site and informs student about rule, regulations & procedures particular to site.
	4. Assumes supervision of student when on site: Instructs and guides student in client-patient care.
	5. Monitors student and assures safe and appropriate preparations and application of procedures, when on site.
	6. Confirms that students are well received and trained when college teacher is absent from site..
	7. Conducts evaluation in consultation with site personnel per evaluation grid and course outline & submits final marks to PC.
	8. Reports to PC concerns regarding non-compliance of site or student with regards to college expectations and responsibilities.
	9. Participates as a member of speciality Sub-Committee.
Student	1. Abides by the schedule, the rules and regulations per course outlines and the Student Clinical Guide (Appendix - I).
	2. Respects hospital policies and procedures.
	3. Documents activities and observations in logbook (Appendix -H)
	4. Participates in course and site assessment.

* RVH and MGH will be assigned students in groups of two with a course teacher present two days per week (in adult respiratory care). Depending on class size, rotations will alternate between sites, one semester with students-one semester without students.

Note, that the student schedule for the semester will be distributed to each site no later than one month prior to the start of the first rotation.

Integration